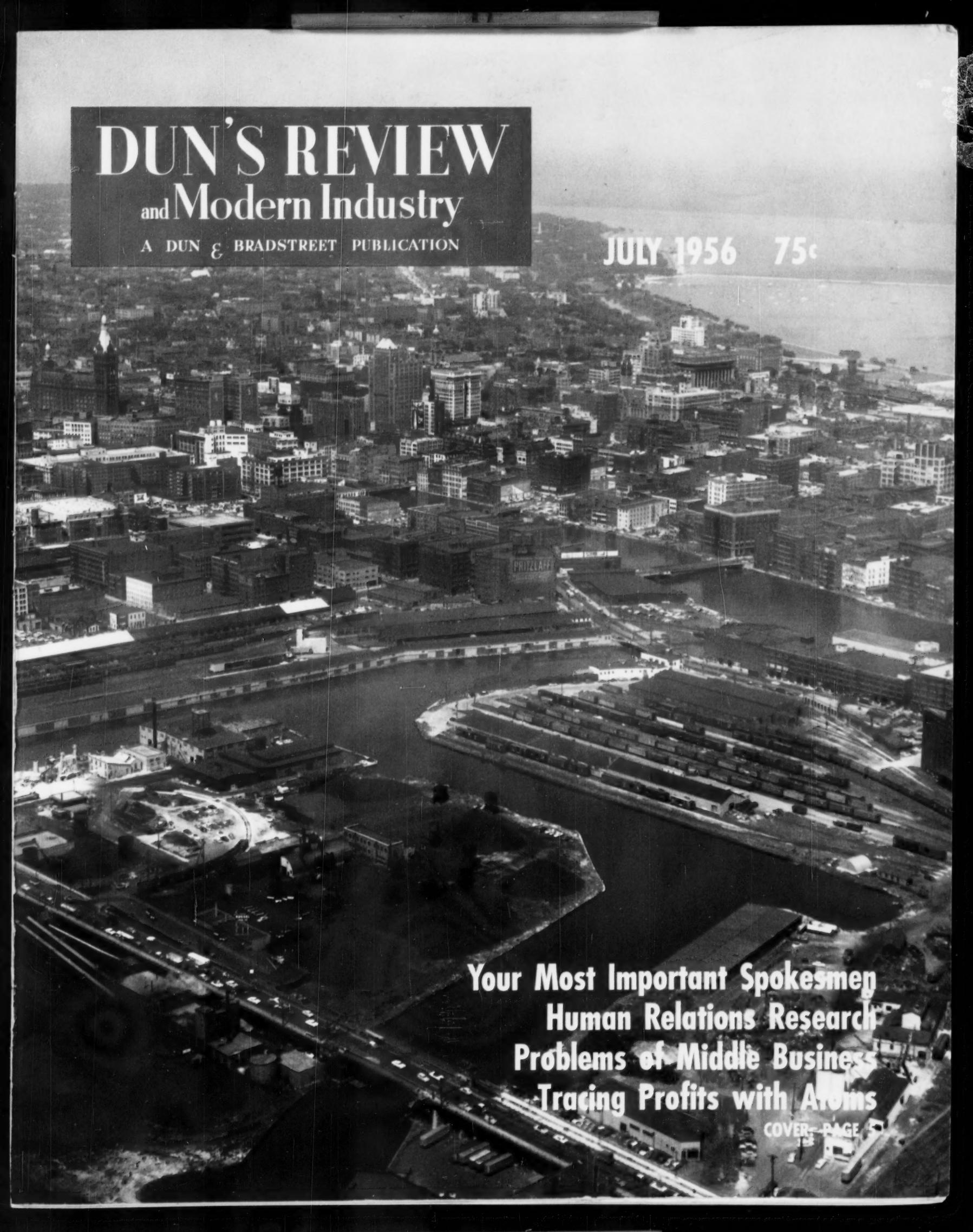


# DUN'S REVIEW

and Modern Industry

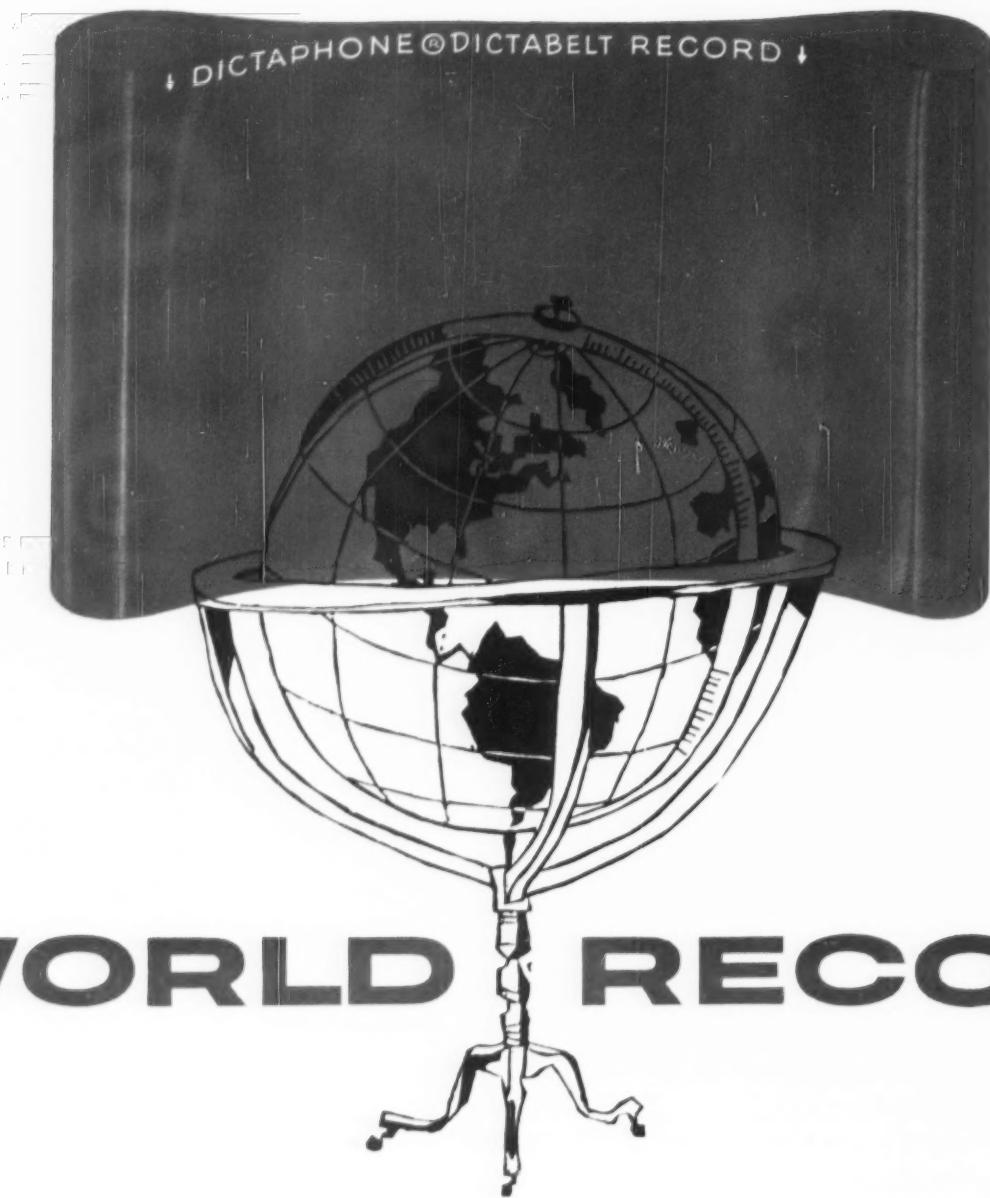
A DUN & BRADSTREET PUBLICATION

JULY 1956 75¢

An aerial black and white photograph of a large city, likely Detroit, showing a dense urban area with numerous buildings, a massive industrial complex with long buildings and smokestacks, and a large rail yard filled with many train cars.

Your Most Important Spokesmen  
Human Relations Research  
Problems of Middle Business  
Tracing Profits with Atoms

COVER PAGE 4



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Around the world, year after year, more and more people are buying Dictaphone TIME-MASTER dictating machines to speed their work—and this little red plastic belt is the reason. It's the DICTABELT dictation record with crystal-clear recording that can't be erased or changed. Mail or file unbreakable DICTABELTS like a letter. *Real cost?* Less than all other dictating mediums. TIME-MASTER and the unique DICTABELT can help you *communicate* easier, faster and better. The Dictaphone office nearest you will be glad to prove this any time you say.



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## DUN'S REVIEW and Modern Industry

READING  
AND  
ROUTING  
MEMORANDA

### Your Most Important Spokesman... 33

KEITH S. McHUGH  
*President, New York Telephone Company*

Their voices are more effective than all the official statements a company can make. "They" are your employees and what they say is often determined by what management does.

### Tracing Profits with Atoms..... 35

ANNESTA R. GARDNER  
*Industrial Editor*

Radioisotopes, atoms that report their own position, are helping over 1,200 companies operate more profitably. Here is how they are doing it and facts worth considering by companies not yet using them.

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D. W. BLEND  
*Vice President, Calumet & Hecla, Inc.  
General Manager, Wolverine Tube Division*

A practical application of a management technique is the best proof that it can work. For more than ten years Multiple Management has been providing better decision at lower levels in this company.

### Human Relations Research..... 42

ALFRED G. LARKE  
*Employer Relations Editor*

There are two ways to tap the power potential in people, and it takes both to do a complete job. Research in human relations points up factors that have too long been neglected in the area of motivation.

### Management, Margins, and Money in Middle Business..... 45

RICHARD SANZO  
*Staff Analyst, Dun & Bradstreet, Inc.*

Big business and little business have their spokesmen, but middle business has its problems. This important segment has been overlooked. What are the problems of the in-betweens? What are the solutions?

### TV's Little Brother Grows Up..... 47

THOMAS KENNY  
*Marketing Editor*

Closed circuit television enables you to see where you can't look to solve many problems in business and industry. The story behind the sudden rise of interest in it suggests ways that you can put it to work.

**THE SEMI-ANNUAL INDEX** of DUN'S REVIEW AND MODERN INDUSTRY for the January-June 1956 period is being prepared. Copies of this index, with listings according to subject, title, author, and companies mentioned, may be obtained upon request when they become available.

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*The Cover*

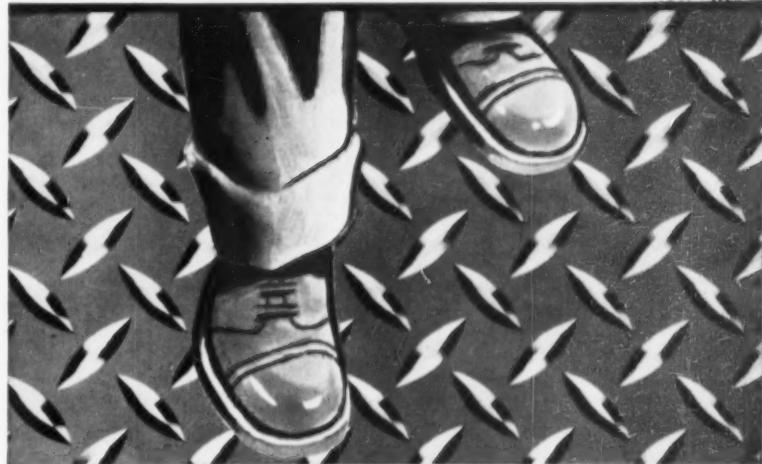
Milwaukee, Wisconsin, long anticipating the St. Lawrence Seaway opening, turned her energy and industry to preparing for it with high hopes for her transportation future.

COKE TRANSPARENCY BY LOCKWOOD, KESSLER & BARTLETT

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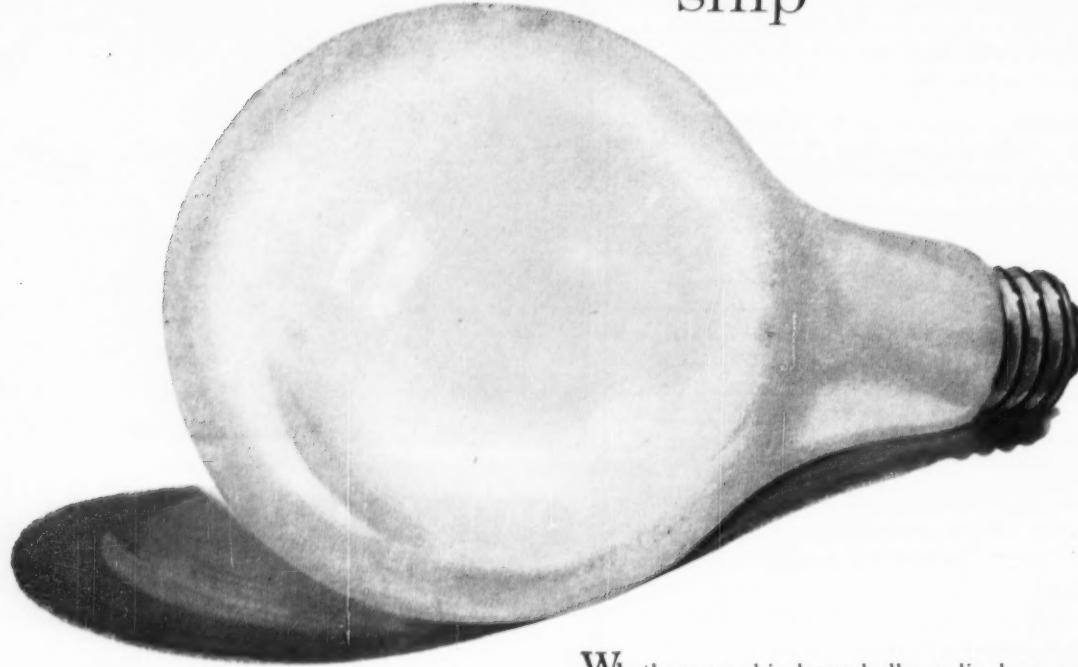
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# HEARD IN WASHINGTON

**ECONOMIC** freedom should rank equally with freedom of speech and freedom of worship. A declaration to that effect by Lloyd Wright, a Los Angeles attorney, and a member of the new commission on government security, gives an inkling of the thinking going on in the group set up by Congress to investigate methods of protecting the national security and preserving basic American rights. Commissioner Wright sees a "drift down the easy road of paternalism." He thinks we have an "unescapable" responsibility to return proper functions of government to states and lesser political bodies. He says there has been "an epidemic of court decisions premised upon the personal ideologies and philosophies of judges—decisions which constitute law by judicial fiat." Four members of the Commission were appointed by the President, four by the president of the Senate, and four by the Speaker of the House.



Natural forces apparently are taking care of the situation which the Federal Reserve sought to influence when discount rates were increased. Reports from the twelve districts are to the effect that all legitimate credit needs have been met. What the Federal Reserve is trying to eradicate from the economy is the boom and bust evil.

Diffusion of economic knowledge is being given marked impetus by the workshops being conducted in 38 universities under the auspices of the Joint Council on Economic Education, instituted by the Committee for Economic Development. For seven years leading economists, including a number from the Federal Government, have given con-

Paul Wooton has been reporting the thoughts of Washington officials for over 40 years. He has served as president of the White House Correspondents' Association, the National Press Club, and the Overseas Writers. He was decorated by the Norwegian government in recognition of articles he wrote from bomb-plagued London during World War II.

centrated doses of educational material to school teachers on the problems of money, credit, production, distribution, taxation and similar subjects. Recent years have seen a remarkable advance in public understanding of economics. These workshops are given credit for material aid to that end.

Special satisfaction is felt in Administration circles in the way its flexible economic policies are panning out. It has tried to be helpful when temporary hesitations developed. It has been willing to compromise and work with those who have had different ideas as to such matters as financing highway development, farm policy and taxes. While the Administration strongly favors the application of surplus to debt reduction, it has taken no arbitrary stand and well may go along with some reduction in taxes if it cannot have its own way.



Long-term outlook for business could not be better. Few dissent from that opinion. Pessimism as to the immediate outlook is diminishing. Travel is 15 per cent ahead of last year. Vacation expenditures are up 20 per cent. Many terminals in the country resemble Grand Cen-

tral Station in activity. Many industries need to slow down for overhaul of equipment. It is recognized that cash register totals cannot show an increase every week and every month. Business thinking is interlarded with realism.

Business executives can contribute to stability at this time, officials suggest, by conservative buying for inventory and by liquidating promptly any excess inventory that may have accumulated.

Shortages of materials and manpower in the year's first six months retarded progress in various lines, particularly in the plant and equipment field. With gradual easing of these shortages some of the progress planned for the first half has spilled over into the second half of the year. This is expected to more than offset the let-down in automobile and a few other lines.



As this is written, the expectation in both political camps is that the Republican ticket will be headed by Eisenhower and Nixon. The only uncertainty is that the President might take himself out of the race. There is no doubt that he meant it when he said he would not run if he did not feel fully able to do what the people expect of a President. Party machinery, however, is in high gear. The doctor's statements that the President will be physically able to participate in the campaign and carry the burdens of office if re-elected were taken at face value by the party leaders. It is apparent that the public has accepted the opinion expressed by the President's doctors that the operation has increased his life expectancy while business is acting

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**says Al Sneden,**  
Art Director  
**BBDO Pittsburgh**



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2400 selectively-screened photographers and reporters are ready to serve you. So for quality photography or reporting the painless way, get in touch with INTERSTATE and make us prove that we can do a job for you.

▼ BBDO Pittsburgh is constantly faced with the problem of getting quality photographs everywhere in the U.S.A. Al Sneden says, "Even when I can't supervise the job myself, I have complete confidence in INTERSTATE to cover most any photography assignment for our clients. INTERSTATE has taken the time to learn our problems, so we seldom have a slip-up. I don't have to nurse-maid the jobs, we get frequent progress reports, deliveries are made when promised, and the quality of the work is high whether black and white or color."



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as though nothing disturbing had happened.

No president probably was more satisfied with his cabinet than is President Eisenhower. He loses no opportunity to speak highly of his "team." No member of the cabinet stood higher in his estimation than did Douglas McKay. He hated to lose him, but yielded to his political advisers who felt that McKay could be of greater service in the Senate. Apparently the President has chosen well in the selection of Fred Seaton as McKay's successor. Secretary Humphrey was enthusiastic in his concurrence. Even Senator Morse said it was "an excellent appointment."

foreign goods and materials at a billion dollar monthly rate, but they are making dollars available through record travel abroad.



An increase in defense spending seems inevitable. Congress shows determination that the United States must keep abreast with Russia and other countries in the improvement of missiles, airplanes and other military equipment. Obsolescence in weapons is progressing at a more rapid rate than ever before. Replacements always are more costly than the outmoded equipment.

Highway legislation was much overdue when the new act became a certainty. Machinery at the Bureau of Roads was oiled and ready to go. State highway departments had their plans in readiness. Intense activity exists in the whole road building field. Two retarding factors are in evidence—shortages of materials and manpower—particularly in the skilled categories. A feature of the new program will be the construction of more "planned" access roads. They reduce accidents by one-third. Federal officials are discouraging the use of the term "limited" with respect to access.



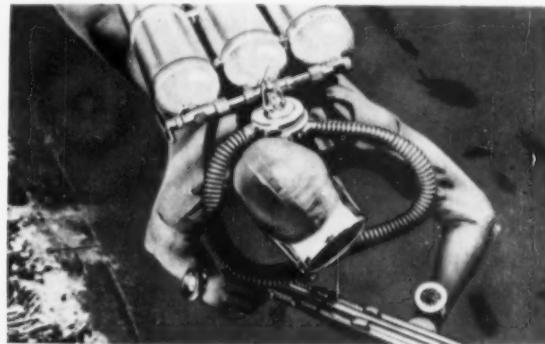
Important decisions concerning the part government will play in the development of atomic energy cannot be delayed long. It is recognized that practical applications of atomic energy have a potential comparable to the introduction of electricity. Operations necessarily must be on a large scale. Some legislators think it is a bigger job than private industry can undertake. Private enterprise, however, is actively exploring the field. It hopes to demonstrate that it is better qualified than government to devise ways in which this new resource can be made useful to mankind.

*Paul eviston*

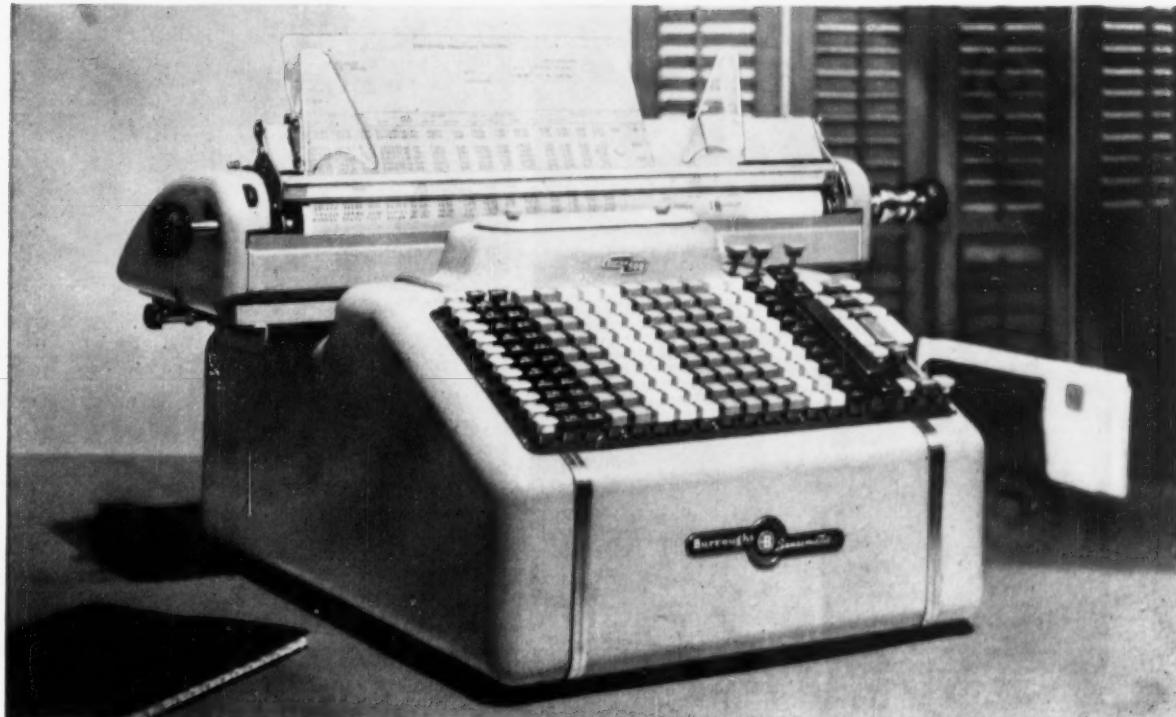
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Or growing like U.S. Divers



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The immediate benefits of planning for automation in office procedures are the results of the systems approach . . . the design of a straight-line work flow that provides for accurate, speedy processing of data. For the larger corporation, such procedure analysis may only correct a simple routine which proved to have been the bottleneck of the entire operation. For the smaller company it may involve a complete integrated system from order-taking to management analysis or any other procedures needed.

Moore manufactures forms only, and

not ADP machines. For that reason it approaches a systems problem with an open mind. It considers the automation required . . . and plans the correct forms and constructions so that an entire system is integrated for efficiency and economy.

When a business gets just the automation it needs to do its work better, excessive investment is not called for. The system fits the purpose and the purse, and introduces benefits on a pay-for-itself basis. Calling the Moore man can be the first step in this process.

*Distance is no disadvantage when ADP shortens the time lag of an order. By cutting 'travel time' between receipt of an order and its entry at the warehouse, ADP improves customer service and speeds operations connected with shipping, invoicing and tabulating sales analyses.*

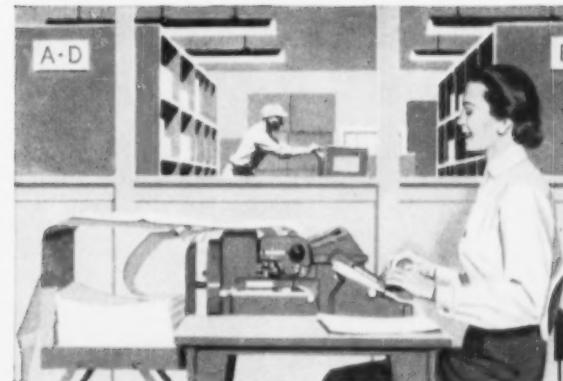
SEE CASE HISTORY ON FACING PAGE ▶

# ITSELF WITH MOORE'S A D P\*

\*Automated Data Processing



**SALES OFFICE** The customer order is entered on a Moore 3-part form. One part serves as an acknowledgment, and is sent to the customer. A by-product of this typing is a tape that transmits information to the warehouse by wire.



**WAREHOUSE** The incoming wire furnishes order information, and Jeanine uses it to prepare a Moore 5-part form, containing shipping data and advices. Jeanine also cuts a tape, a by-product of her typing, with invoice information on it.



**INVOICING** The tape Jeanine prepared is used by Grace, back in Billing Dept., to prepare customer invoices. Grace also cuts a tape, simultaneously, and this contains selective information for tabulating and sales analysis.



**STATISTICS** The small company may turn over its selective tapes to service bureaus, where they're converted to punched cards for tabulating into sales summaries. Many large concerns are equipped to do this work on their own premises.

## Moore forms are the heart of the system

...they deliver the A D P benefits

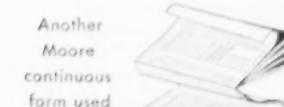
Speed and accuracy are built into a system like this—with the warehouse getting instructions the same day the order is received. Delays are eliminated, and so are the nuisance and negative results caused by transcribing errors. Invoices go out systematically with speed, and

sales analyses are prepared rapidly for up-to-the-minute reports on inventory conditions. Any company, large or small, can enjoy practical ADP benefits, like those above, just by calling in the Moore man. He's in the Classified or can be reached by writing the Moore office nearest, below.

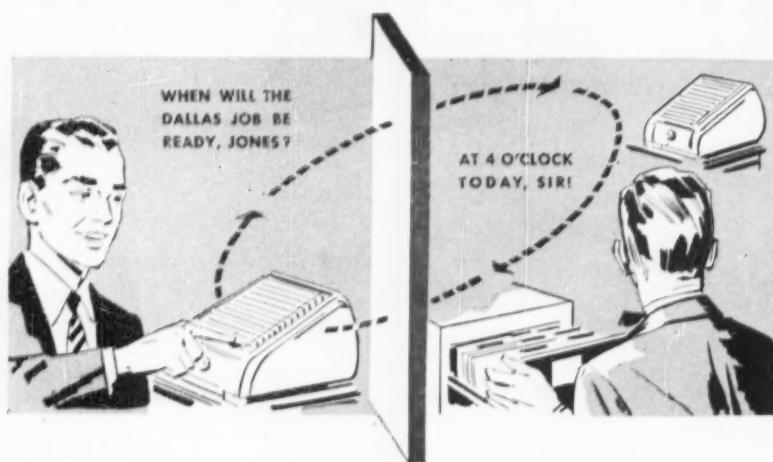
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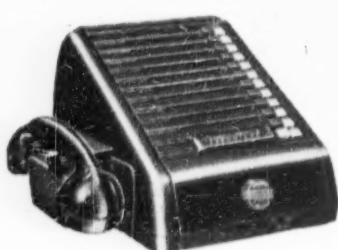


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CRAWFORD H. GREENEWALT

President, E. I. du Pont de Nemours & Co., before the American Newspaper Publishers Association.

the material one of preserving our most productive source of progress and the spiritual one of insuring to each individual the human dignity which is his birthright.

I know of no problem so pressing, of no issue so vital. For unless we can guarantee the encouragement and fruitfulness of the uncommon man, the future will lose for all men its virtue, its brightness, and its promise.

### Wanted: a new race of managers



" . . . must give leadership in the creation of human values."

HAROLD B. MAYNARD

President, Methods Engineering Council, at 1956 Wallace Clark Award Luncheon.

We are dangerously close to the degenerative phase of the human relations cycle at the present time. Can we not recognize this and do something about it before it is too late?

Now that we are ahead in the struggle for survival against the forces of external nature, can we not turn some of our inventive genius to the solution of the problem of survival against the forces of human nature?

The improvement of human relations on a world-wide basis is not something that can be left to government, to the clergy, to industrial relations experts in industry. If we are to have better management from the viewpoint of human relations, we must have better managers. We must have people who temper their application of manage-



## looking for super transit service?

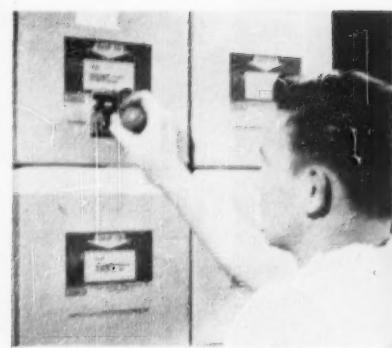
... focus on the people at

You'll get fast action if your New York correspondent is Chase Manhattan. Chase Manhattan is on the job 'round the clock, processing and clearing correspondents' transit letters at top speed. The fastest transportation, combined with up-to-the-minute business machines and experienced personnel, forms an unbeatable team that cuts float time to a minimum.

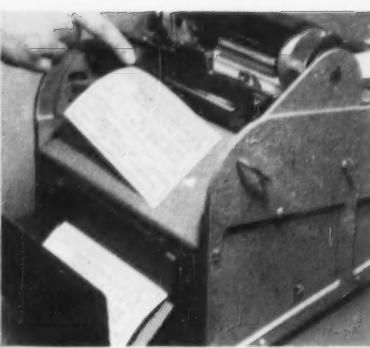
*Why don't you talk to the people at Chase Manhattan?*

THE  
**CHASE**  
**MANHATTAN**  
BANK

HEAD OFFICE: 18 Pine Street, N.Y. 15  
*Member Federal Deposit Insurance Corporation*



**DIRECT-TO-CARTON?** Here's a fast, neat, simple one-hand operation. Cartons are pre-printed with label frame. Address is imprinted with Weber handprinter and stencil. What could be easier?



**OR LABELS?** The Model KC-E prints shipping labels from die-cut stencil, fills in address information and cuts labels to size . . . all in one operation. Makes label inventory and preparation simpler.

## Investigate Weber Systems for lower cost shipping operations

The surest way to get shipments out faster, at less cost and with fewer errors is to simplify your shipment addressing operation. And that's exactly what Weber can do.

Pictured on this page are some Weber Systems now being used by thousands of efficiency-wise shippers in every industry. Whether you address directly on containers or prefer labels there's a Weber System available to get your multiple shipments addressed quickly, accurately, inexpensively.

### WEBER STENCILS CAN BE INTEGRATED WITH ANY PAPERWORK PROCEDURE



**WEBER STENCILS** are available in Tab-On style for simultaneous preparation with invoice, bill-of-lading or shipping forms, or . . .

**MOUNTED** on marginal punched carrier sheet, Continu-matic Stencils are quickly cut independently of paperwork, then correlated with forms.

**MODERN OFFICE MACHINES**, such as automatic tabulating equipment, Teletype and Flexo-writer cut Weber stencils as part of user's paperwork procedure.

**Weber**

**MARKING SYSTEMS**

Div. of Weber Addressing Machine Co., Inc.,  
Mount Prospect, Ill.

CREATORS OF SYSTEMS AND EQUIPMENT  
FOR ADDRESSING AND MARKING

#### WEBER MARKING SYSTEMS, Dept. 3-G Mount Prospect, Illinois

Please send me information about:  
 Direct-to-Carton System  
 Label Printing System  
 Shipping Paperwork Procedures  
 Have your representative Call

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_

ZONE \_\_\_\_\_ STATE \_\_\_\_\_

ment techniques with a deep understanding of the human problems involved. Our management leaders must give leadership in the creation of human values as well as material values.

It is entirely possible that the project of establishing a world-wide management development activity can be so organized and formulated that it can become a "moral equivalent for war" to us in management. The development of a new race of managers who can do in depth the job of improving human relations that so badly needs to be done, can be a challenge worthy of the energies, sacrifices, and creative effort of all of us. The goal of ultimate world peace is the most important faced by mankind. We in management have a unique opportunity to make an important contribution.

*Basic research in private industry*



" . . . does not receive sufficient stimulation."

ELISHA GRAY, II

President, Whirlpool-Seeger Corp., before the National Industrial Research Conference.

The amount of money being spent for basic research in this country is pitifully small and utterly inadequate.

In all candor, it must be said that private industry has neither created the proper environment for basic research nor contributed significantly to its development. I think the reasons are quite clear. In most circumstances, pure research cannot be predicted as a profit-making endeavor. By its very nature, therefore, pure research does not contain the elements which allow for the exercise of the ordinary type of management decision. You cannot say that, if you invest \$1 million, for example, in research on solid physics, you can expect any commercial result or profit later on. So usually the money goes into the tangible, the predictable commercial effort.

Pure research does not receive sufficient stimulation under the

### Heavy Duty Bench Type

## ALLEN PUNCH PRESSES

**POWERFUL  
DEPENDABLE  
ECONOMICAL**

Complete Line  
Many Popular Models  
 $\frac{1}{2}$  to 5 ton capacities



Model B-2  
2 ton-\$87.50  
Tilting model  
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**No. 1 in 50,000 Firms**

**Because It Outlasts Ordinary Brushes**

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**Speed Sweep**

The brush with  
the steel back

27 Speed Sweep styles and sizes to meet every sweeping need. Write for prices today.

**MILWAUKEE DUSTLESS BRUSH CO.**  
530 N. 22nd St., Milwaukee 3, Wis.



*Now, letter trays, phone and wastebasket are in the drawers.*

## **Waste paper baskets are now a waste themselves**

This man is making use of one of many innovations found only in Shaw-Walker *Organized Desks*. It's a wastebasket drawer. Out of sight, instantly accessible, easily removed, it holds more paper than four ordinary wastebaskets. Saves time, floor space and stumbling.

The *Organized Desk* is guaranteed to help you get more done, more easily, more quickly. Its drawers organize everything from paper clips to important records—put what's needed most in the easiest position for quickest use—eliminate clutter and confusion.

One or two Shaw-Walker *Organized Desks* in your office will convince you that all your



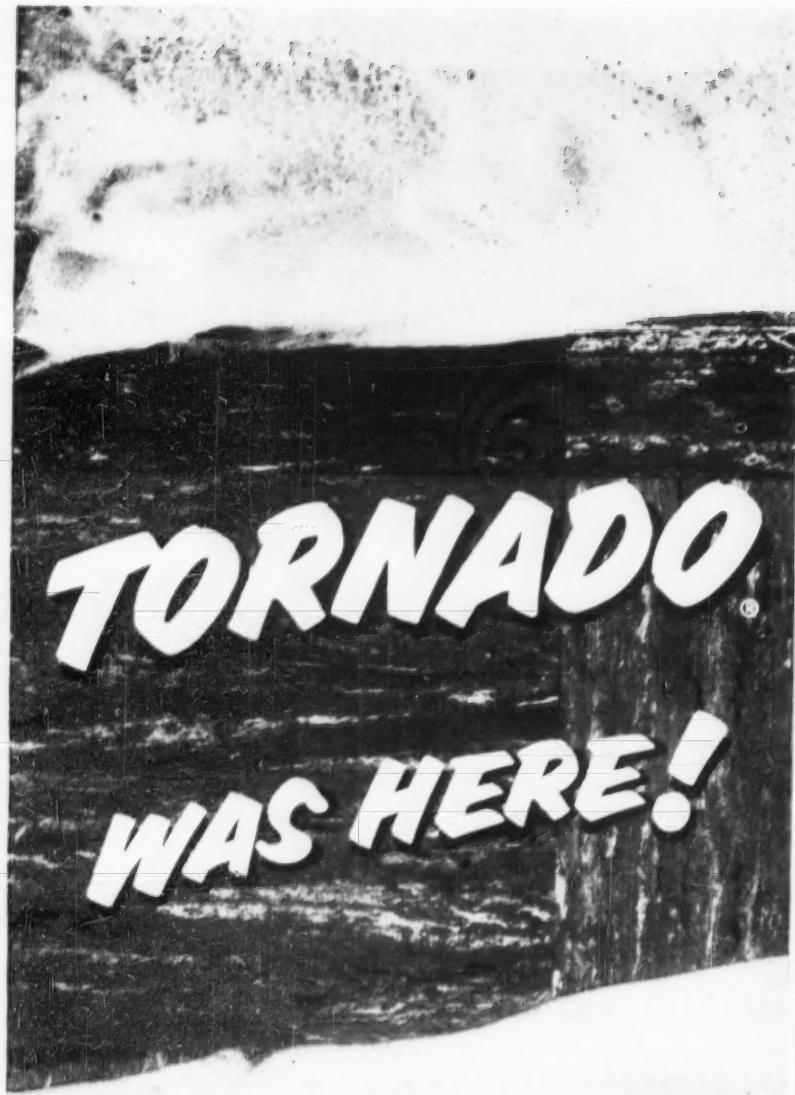
desk people should have this new profit tool.

The 292-page Shaw-Walker "Office Guide" pictures, describes and plainly prices eighty-six *Organized Desks* and 5,000 matching items. Free, when requested on business letterhead. Write Shaw-Walker, Muskegon 89, Michigan.

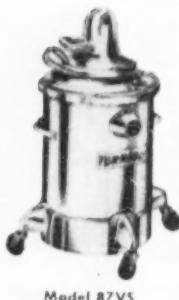


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Largest Exclusive Makers of Office Equipment  
Muskegon 89, Mich. Representatives Everywhere



# TORNADO WAS HERE!



Model 87VS

A high powered, free wheeling Tornado Industrial vacuum cleaner just left, pulling every drop of water off the floor, out of cracks and crevices, leaving the surface "bone dry" and spotless. The powerful Tornado suction is faster, more efficient . . . and the floor is ready to re wax and polish immediately.

Tornado requires no conversion from wet to dry pickup. Thousands of satisfied users are experiencing Tornado cleaning results, so can you!

Write for Bulletin 660 or an on-the-job demonstration now!

**BREUER ELECTRIC MFG. CO.**

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TAKES THE DUST OUT OF INDUSTRY

ground rules of our competitive system.

Just as the Government gives special tax consideration to the development of our natural resources, I propose that our Government likewise give special consideration to the development of our scientific resources. I propose, therefore, that amounts of money spent by corporations or individuals for pure research should be deductible in whole or in substantial part from the Federal income tax.

Such basic research work for which a company claims a deduction would undoubtedly have to be fully disclosed for use by all. In this way, the national interest would also be served by the general contributions that would be made through pure research.

Training executives in human leadership



"... most important and most overlooked."

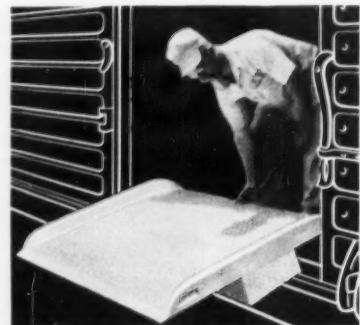
BEN GOLDSTEIN

Administrative Vice President, Winkelman Brothers Apparel, Inc., before the Credit Management Division Conference of the National Retail Dry Goods Association.

Most important and most overlooked is the need for training executives in human leadership, which until recently has been almost entirely lacking in most educational and training programs. . . .

When people do not understand management correctly as an activity requiring special skill and training, the usual procedure is to promote the best comptometer operator, billing machine operator, or credit checker to a supervisory first-line job. . . .

In most cases these people are no more qualified to manage than the less proficient biller or checker because they simply do not have the skills and training to do the management job of planning, controlling, and organizing. There must be a differentiation between technicians and doers, however proficient, and people who by education and training are qualified to do the management job. . . .



## MAN PUTTING DOWN A SOUND INVESTMENT

This company has made a wise investment—one which will pay dividends year after year. The man above is dropping a Magliner magnesium dock board in place on the company's dock. This new Magliner will speed loading . . . get more out of power trucks and other loading equipment . . . keep costs down! Made of light, strong magnesium, it will protect men, loads and equipment against accidents and costly damage. Magliners are low in initial cost—and because they provide dependable, long-life service with less maintenance they give you greater economy ALL ways! Find out today how Magliner dock boards can cut costs in your operation.

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Bulletin  
DB-204

**MagLiner**  
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Saves Typing Time . . .  
Stops Eye Fatigue!

**PANAMA**  
**"COPY-HOLDER"**  
BOX

Panama-Beaver's exclusive patented carbon paper box has a built-in copy holder that flips open with a flick of the wrist. Keeps copy material upright and in full view . . . speeds work . . . cuts office costs. Folds up neatly under box lid after use. COSTS NOTHING EXTRA when you buy Panama-Beaver Carbon Paper—America's sharpest-writing, cleanest-erasing smudge-free carbon!

Have the Panama-Beaver representative near you show you the Copy Holder Box without obligation!

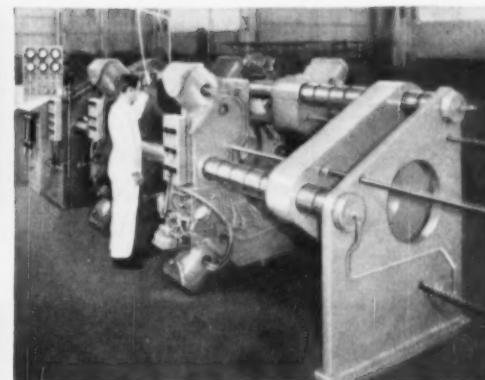
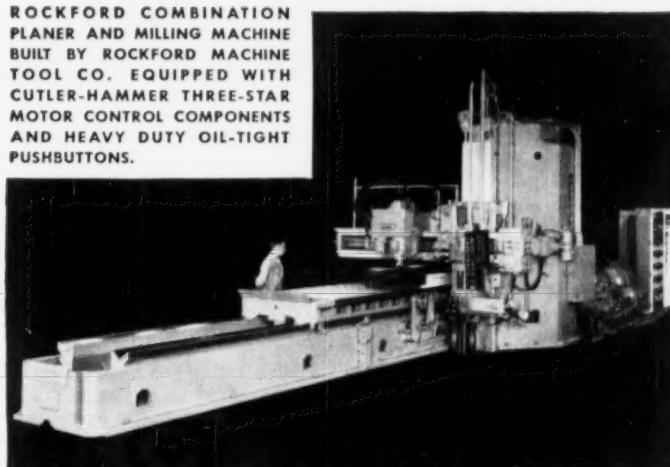
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Ribbons • Carbons  
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MANIFOLD SUPPLIES CO., 19 Rector St., N.Y. 6, N.Y.  
Ebony Duplicating Carbons • Eye-Saver  
Unimasters • Lustra Colorful Inked Ribbons

*Choice of the Leaders*



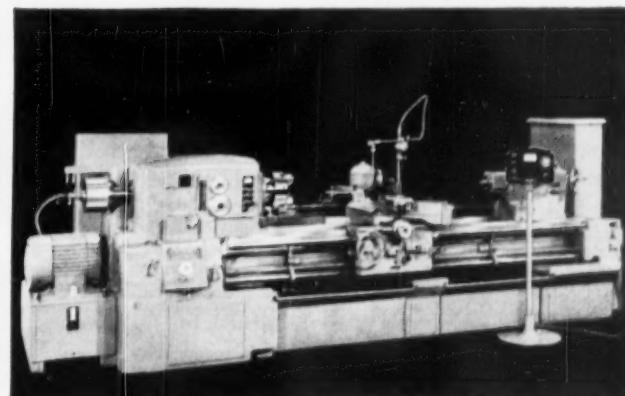
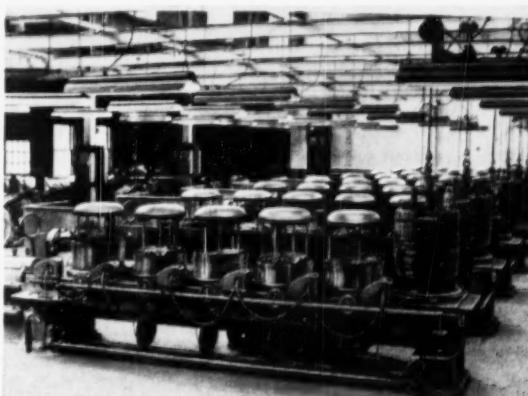
*The Mark  
of Better Machines*

ROCKFORD COMBINATION  
PLANER AND MILLING MACHINE  
BUILT BY ROCKFORD MACHINE  
TOOL CO. EQUIPPED WITH  
CUTLER-HAMMER THREE-STAR  
MOTOR CONTROL COMPONENTS  
AND HEAVY DUTY OIL-TIGHT  
PUSHBUTTONS.



MENASCO MANUFACTURING COMPANY'S 200 TON  
UNIWELDER FOR BUTT-WELDING TUBING. BUILT BY  
HUFFORD MACHINE WORKS, INC. EQUIPPED WITH  
CUTLER-HAMMER THREE-STAR MOTOR CONTROL AND  
HEAVY DUTY OIL-TIGHT PUSHBUTTONS.

MORGAN-CONNOR WIRE DRAWING MACHINES BUILT BY  
MORGAN CONSTRUCTION COMPANY. EQUIPPED WITH  
CUTLER-HAMMER THREE-STAR MOTOR CONTROL.



MONARCH SERIES 62 PRESELECTOR DYNASHIFT LATHE BUILT  
BY THE MONARCH MACHINE TOOL CO. EQUIPPED WITH  
CUTLER-HAMMER THREE-STAR MOTOR CONTROL.

## *The Stars Point to Progress*

Leadership is not a destination; it is a journey. The laurels of yesterday are quickly lost unless they are rewon again and again. Leading machinery builders know this and maintain their coveted position by a never-ending search for improvements . . . new materials, new methods, new components. Progress *must* involve change.

There is much meaning in the broad swing to Cutler-Hammer Three-Star Motor Control and Heavy Duty Oil-Tight Pushbuttons by the lead-

ing builders of all types of machines. Such acceptance can come only through careful comparison that proves a definite superiority. Look to the stars for leadership. More than ever, Cutler-Hammer electrical equipment is the mark of better machines. Your inquiries will receive prompt attention. Write or wire today. CUTLER-HAMMER, Inc., 1436 St. Paul Ave., Milwaukee 1, Wisconsin. Associate: Canadian Cutler-Hammer, Ltd., Toronto, Ontario.

# **NEW COLOR CODE for steel identification**

## **More logical system aids quality control**

Accurate identification of steel—always a point of paramount importance with Ryerson—now becomes even more meaningful than before with the introduction of a new system of color marking.

Based on logical groupings of related types of steel, this new Ryerson color code is easy to understand, remember, and use. It strengthens still further the rigid program of quality control that for years has guarded the known high uniform quality of Ryerson Certified Steel.

Here's how the system works:

1. Single colors are used for standard Carbon and Carbon Manganese Steels.
2. The colors GREEN, BLUE, YELLOW AND PINK always define Carbon content.
3. Centered dots of these Carbon colors always indicate the heat treated condition.
4. Centered dots of other than Carbon colors identify characteristics other than analysis, carbon content or the heat treated condition.
5. PURPLE, BLACK, WHITE, ORANGE, GOLD and BROWN each designate a related group of steels.
6. RED marking of any kind always indicates Special Ground Finish.

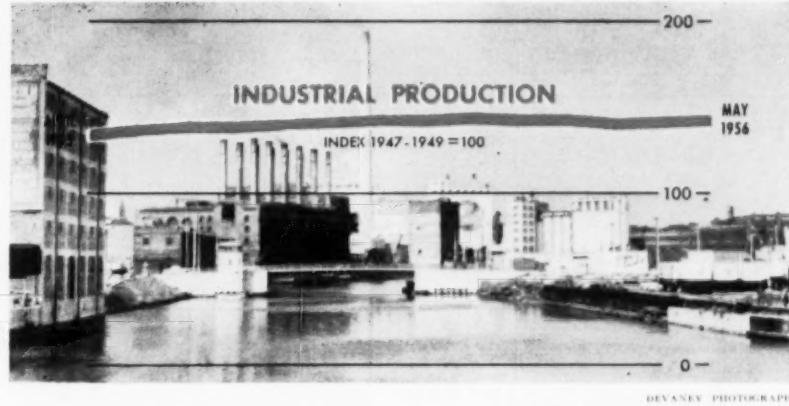
If you do not already have this new steel identification chart, we will be glad to send a copy (printed in full color) for your Ryerson Stock List. Call or write your nearby Ryerson plant, or write Box 8000-A Chicago 80, Illinois.

Principal products: Bars, structurals, plates, sheets, tubing, alloys, stainless, reinforcing, machinery & tools, etc.

# RYERSON

JOSEPH T. RYERSON & SON, INC.

PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE, N.C. • CINCINNATI • CLEVELAND • DETROIT  
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After ironing out the customary seasonal ups and downs, the fluctuations in total industrial production over the past year or so were hardly noticeable. Output in June was a bit higher than a year ago.

- 10 Million Cars by '65
- Orders Increase
- Consumers Buy More

- Collections Improve
- Employment Near Peak
- Failures Jump

## The Trend of BUSINESS

**S**MOOTH as a mill-pond on a Summer's day, the trend line of over-all business activity scarcely rippled in June. Although automobile output in the first week of June toppled to the lowest level in almost two years, down 39 per cent from a year ago, the slackening was more than offset by the expanded rates of production in metals and machinery.

The steel manufacturers, operating at record levels in June, appeared likely to pour more than 10 million tons of steel for the ninth consecutive month. While bookings from some of their best customers, the automobile manufacturers, were considerably smaller than last year, freight car builders, and the construction and petroleum industries continued to require a record volume of steel. Manufacturers of rubber shipped fewer tire casings for passenger cars than in 1955, but, on the whole, the suppliers to the automobile industry were not suffering as much as the drop in car output might imply.

### New car sales up

The combination of increased sales and lower production helped the automobile dealers to pare their inventories of new cars in May. Down 11 per cent to 806,000 on June 1, dealers' stocks of new cars represented roughly a 50 day supply at the May sales rate. It was hoped that in June there might be a further reduction to the 30-day supply level traditionally considered "normal" by the industry.

While he thought it might take a few years before the automobile manufacturers again sell as many cars as in 1955 (7.9 million)—such a volume may be commonplace by 1960, according to William C. Newburg, president of the Dodge division of the Chrysler Corporation. And said he, "We may very well reach 10 million new

cars a year by 1965, or shortly thereafter." To prepare for this expanded market, Mr. Newburg thinks that the automobile industry will probably invest \$6 or \$7 billion in new facilities over the next five years. This is roughly the same amount spent for the purpose in the ten years since the end of World War II.

### Expansion rate high

Business, over-all, spent close to \$17 billion for new plant and equipment in the first half of 1956, according to a report from the Securities

and Exchange Commission. This compares with about \$13 billion in the first half of 1955. While the actual outlays were somewhat lower than it was earlier planned, the unrealized expenditures are included in the expansion plans for the remainder of the year. It is still expected that plant and equipment expenditures will reach a new peak, \$35 billion for 1956.

### Revival in orders

Declining less than usual for the time of year, manufacturers new orders in April were 5 per cent higher than a year ago, displaying renewed vigor for the first time since December. Bookings in most of the major manufacturing industries were larger than expected, except for primary metals, where the growth in backlog during the past year was above average. Unfilled orders edged upward in fabricated metals and machinery, but the rise was offset by dips in backlog in the primary metal and transportation equipment industries. At \$57.2 billion, the volume of unfilled orders was about the same as in the two preceding months, 19 per cent above a year ago.

### Spurt at retail

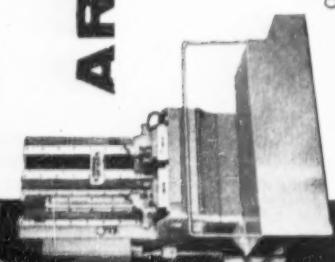
The high volume of manufacturers orders was supported by expanded consumer buying as well as the industrial expansion. Retail sales advanced steadily in the early weeks of June. Gains from a year ago averaged about 6 per cent, twice the rate of increase in May. At \$16.2 billion, retail sales in May were the highest for any month so far in 1956, and higher than in any month in 1955, except December (chart on page 20). Sales were higher than a year ago in all of the major commodity groups, except automobiles. While dollar volume among dealers in cars, parts, and

### Weekly Business Signposts

SELECTED BUSINESS INDICATORS	LATEST WEEK*	PREVIOUS WEEK	YEAR AGO
Steel Ingot Production... Ten Thousand Tons	236	230	229
Bituminous Coal Mined... Hundred Thousand Tons	103	97	96
Automobile Production... Thousand Cars and Trucks	126	126	165
Electric Power Output... Hundred Million KW Hours	114	110	100
Freight Carloadings..... Thousands Cars	801	787	780
Department Store Sales... Index Number (1947-1949=100)	129	122	108
Wholesale Prices... Index Number (1947-1949=100)	89	89	91
Bank Clearings..... Hundred Million Dollars	123	102	116
Money in Circulation..... Hundred Million Dollars	305	305	301
Business Failures..... Number of Failures	286	257	214

Coal and sales for the second week of June; steel and clearing for the fourth week, all others for the third week.  
Source: Amer. Iron & Steel Inst.; Bureau of Mines; *Automotive News*; Edison Elec. Inst.; Assn. of Amer. Railroads; Bureau of Labor Statistics; DUN & BRADSTREET, INC.

**ONE Detroit Broaching  
Machine Replaces 28  
Milling Machines...  
and on Low Production, Too!**



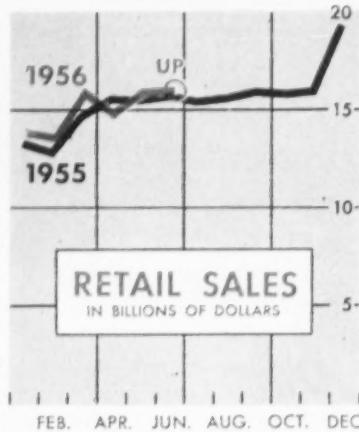
# ARE YOU BROACHING?

## DETROIT BROACH and MACHINE COMPANY

DEPARTMENT H7

OFFICES IN PRINCIPAL CITIES THROUGHOUT THE WORLD  
• ROCHESTER, MICHIGAN

### The Trend of BUSINESS



*The impact of layoffs in the automobile and some other durable goods industries is reflected in a slackening in rate of rise rather than a drop.*

accessories was 4 per cent above the April level, it was down 7 per cent from May 1955. There were month-to-month gains of 13 or 14 per cent in apparel, furniture and appliances, and lumber, building materials, and hardware in May.

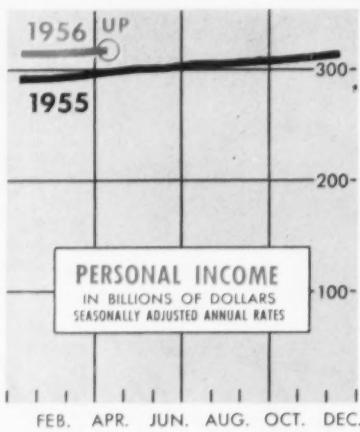
Retail volume in the first half of June was above a year ago in each major geographic region, up about 6 per cent for the nation as a whole. The rate of gain in the Pacific Coast area lagged behind that for the rest of the country, while volume in the East and Northwest increased at a somewhat faster rate than the U.S. average.

#### Off the cuff

Consumers paid off their installment debts at a rapid rate in April, a rate that could liquidate the \$28.3 billion in installment credit outstanding if continued for ten months with no new extensions of credit. This is not to suggest that such a course of action would be desirable; roughly 20 per cent of retailers annual volume is financed by consumer credit.

#### On again

While new extensions of automobile credit in April dropped below the levels of both the preceding month and a year ago, the decline was more than counterbalanced by an increase in credit granted for



*Although the cost of living was slightly higher than in early 1955, consumers this year had far more purchasing power than ever before.*

the purchase of home furnishings and appliances, and repair and modernization loans. New extensions of installment credit surpassed repayments by almost \$300 million.

Total consumer credit outstanding in early May, at almost \$36 billion, was more than \$5 billion higher than it was a year previously. This total includes both installment and non-installment debt. Almost all of the year-to-year growth occurred in installment debt.

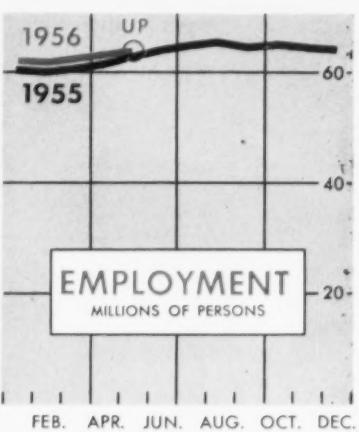
#### Collections easier

Overdue accounts were more collectible in June than at any time since last September, according to data from the American Collectors Association. There were decreases in the number of accounts needing special attention, the dollar volume of these accounts, and the average size of the accounts. At the same time, the average payment increased.

The highest collection averages were in the East Central, South Central, and Southwestern states, while the collectibility of accounts in the New England, Southeast and Mountain states was somewhat less than that in other areas.

#### Employment outlook

The high levels of retail sales and repayments of installment debt were attributed to the record levels

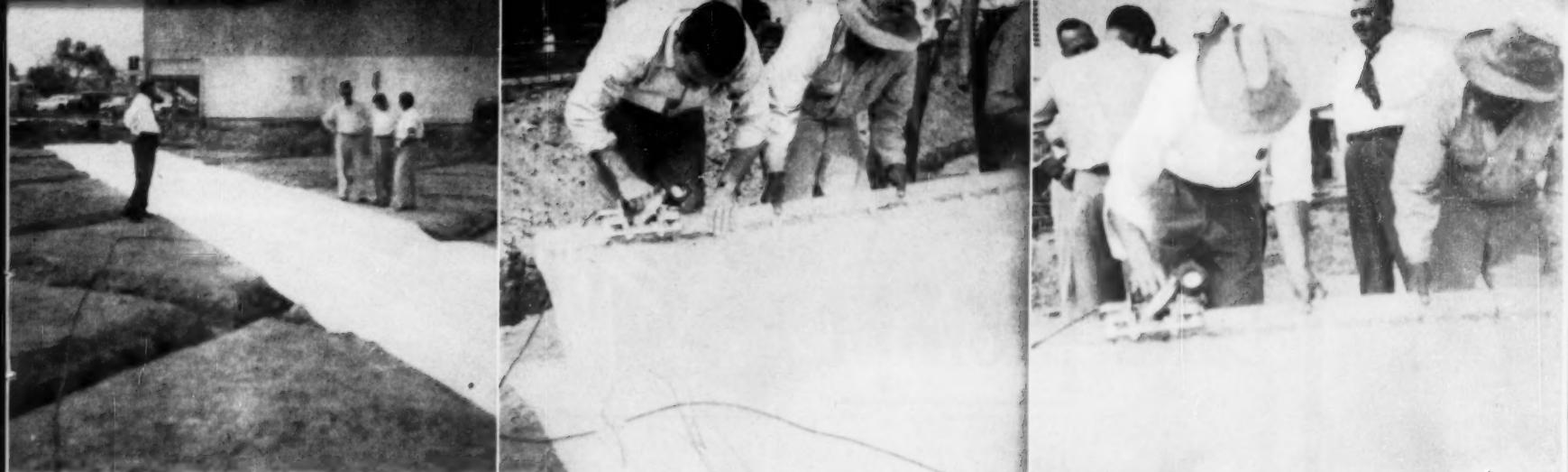


*The June estimate is based on spot reports from 66 selected Dun & Bradstreet offices. The April dip resulted from the early occurrence of Easter.*

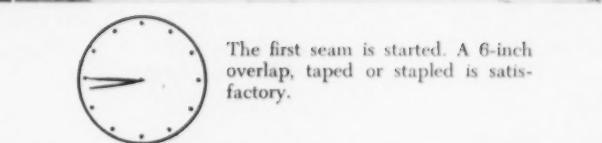
of employment and income. That employment would remain high for the next few months was reflected in the employer hiring plans, reported by the Bureau of Employment Security at the end of May. Decreases in unemployment were expected in about two-thirds of the 149 major labor market areas. Most of the new employees were expected to be needed for construction and other outdoor work.

While producers of automobiles, farm machinery, and household appliances thought they might have fewer workers on their payrolls in July than in previous months, the loss in jobs was expected to be more than outweighed by increased hiring in the major aircraft, metal products, and machinery centers. The steel manufacturers expected to boost their hiring, too, but their hiring plans were based on no interruption in production after the expiration of the industry-union wage contracts on June 30.

The number of major areas with more job seekers than job openings increased slightly in May, but there were less than two-thirds as many such areas as a year ago. For the nation as a whole, civilian employment in May surpassed the 65-million mark, two months sooner than it did last year. There were about 4 per cent more people employed this May than last, although unemployment rose by a similar percentage. Most of the increase in un-



Ten thousand square feet to be covered with a polyethylene moisture barrier. The bed of sand has already been prepared as the film is laid out.



The first seam is started. A 6-inch overlap, taped or stapled is satisfactory.



Work moves fast with this simple electric sealer. Each 32-foot wide strip of polyethylene is joined to its neighbor.



The final seam is completed. Pipes and electrical outlets protrude through holes cut in the film. They are then wrapped tightly in small sheets of film and sealed with the main barrier.



The polyethylene film is pulled into position. Being tough and flexible, few men are needed to handle the light weight membrane.



Completely in place, steelwork is already being laid in preparation for pouring concrete for the slab.

*Here's how it's done...*

# A lifetime moisture barrier in only $2\frac{1}{4}$ hours

Polyethylene moisture barriers are tough and long-lived . . . go in fast with a big saving.

Today, more and more architects and builders are turning to film made of BAKELITE Brand Polyethylene for a variety of moisture barrier applications. Polyethylene film is very light in weight, requiring fewer men for installation. Flexible in the most extreme cold, it is tough, unaffected by chemicals and easily sealed by heat, staples or tape. This application, developed by The Visking Corporation, is ideal

for waterproofing almost everywhere . . . for protecting materials and equipment from weather . . . even for dustproofing in walls and subflooring.

Why not find out about using film made of BAKELITE Brand Polyethylene in your next building? Consult your architect or contractor for complete information, or write Dept. QE-42.

Data courtesy of Wilson Lumber Co., San Antonio, Tex., distributors for "Visqueen Polyethylene Film" made by **The Visking Corporation**, Terre Haute, Ind.

*It pays to  
specify film  
made of*



**BAKELITE COMPANY**, A Division of Union Carbide and Carbon Corporation UCC 30 East 42nd Street, New York 17, N. Y.  
The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

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**U**SE COMMERCIAL CREDIT's method of advancing funds. Businesses are usually able to obtain more cash from COMMERCIAL CREDIT than from other sources and on a continuing basis, with no need for renewals.

Our method is fast, flexible, reasonable. Normally, cash is available within three to five days after first contact. The amount may range from \$25,000 to millions. The period of use may vary from a few months to years. There are no preliminary costs and the one reasonable charge is tax deductible.

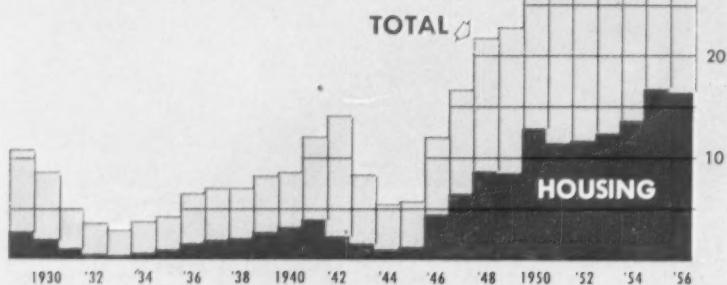
During the past year companies from coast to coast used more than 600 million dollars of our funds for working capital purposes. For complete information on how your company can use our method to advantage, get in touch with one of these COMMERCIAL CREDIT CORPORATION offices:

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## Consult Commercial Credit

A service available through subsidiaries of  
 Commercial Credit Company, capital and surplus over \$190,000,000

**NEW CONSTRUCTION**  
 VOLUME IN BILLIONS OF DOLLARS



## 1956: BUILDING'S BIGGEST

Running consistently below the year-ago level in the first five months of 1956, the number of new housing starts was the focus of concern for the construction industry. The dollar volume of new residential construction actually put in place in the first five months of 1955 was 9 per cent below the year-ago level, a smaller rate of decline than the 16 per cent in the number of housing starts.

Housing starts began to decrease in September 1955, a usual development for the time of year, but the decline was somewhat greater than might be attributed to seasonal factors. And the Spring recovery from the January low point was slower in 1956 than in some previous years.

### Housing Awards Up

Contrasting with these declines, the volume of contract awards for future residential construction in the first four months of 1956 was 8 per cent above the 1955 level.

Although the number of dwelling units contracted for was down slightly, the amount of floor space was up, as well as the dollar volume of awards. This reflects a trend which has been in evidence for some months toward larger and somewhat higher-priced units.

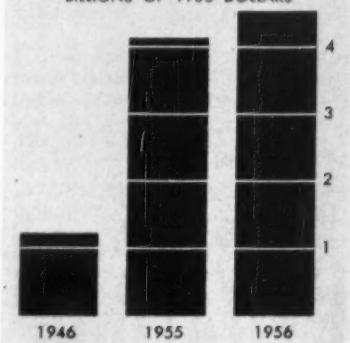
### New Peak Likely

The slight edge over a year ago (1 per cent) in the total dollar volume of construction put in place has been maintained by substantially increased outlays for private non-residential construction and a slight

increase in public building. The prospect is for another record construction year.

The record plans for plant expansion this year hold promise for further gains in outlays for non-residential building for the remainder of 1956. The momentum of public construction seems likely to gain, with increases particularly in school building and highway construction. In the first five months

**HIGHWAY CONSTRUCTION**  
 BILLIONS OF 1955 DOLLARS



of 1956, highway construction was 13 per cent higher than in the comparable period of 1955.

Usually reaching its peak in the early Fall months, employment in the construction industry in the past few years has ranged between 2.7 to 2.9 million workers at the seasonal peak. If this year's performance so far is any indication, construction employment should reach, or surpass, the higher figure sometime in the Fall months.

THE END



Fire of unknown origin destroys historic Douglas County (Ga.) courthouse (Photo by Atlanta Journal)

## Loss that will be felt for years

A look at history shows that courthouses boast no immunity . . . are as vulnerable to disaster as buildings down the street.

But when a courthouse is struck—and birth, marriage and property records are destroyed as in the fire above—the loss is felt by one and all. Years are required to untangle the snarl.

A resolution passed by the Georgia General Assembly is a big step forward in protecting vital records, which are the connecting link with the past, and enable present custodians to function. It authorized a committee to study the advisability of constructing a building where all state and county records can be microfilmed, restored and placed for safekeeping, and "the prospect of destruction reduced to absolute minimum."

Note: Safe in the Secretary of State's office are Recordak Microfilm copies of Douglas County Tax Digest through 1953. Films are viewed in Recordak Film Reader . . . paper enlargements made directly from films at low cost.

New free booklet, "Short Cuts that Save Millions," shows how more than 100 different types of business—thousands of concerns are protecting vital records and simplifying daily routines with Recordak Microfilming. Some of the short cuts described should work equally well for you. And you'll see how savings outweigh all costs—you get up to 80 pictures for 1¢ with a Recordak Microfilmer; and you can buy one for as little as \$550. *Must reading for every executive!*

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A-7

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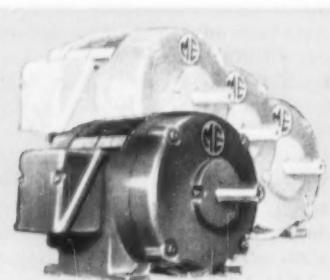
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*Nationwide Service*

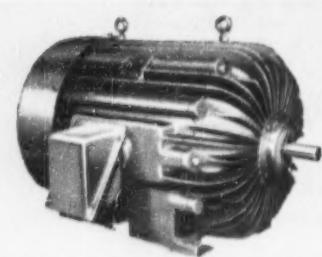
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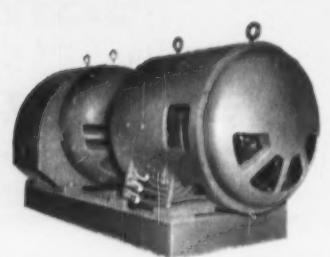
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## The Trend of BUSINESS

employment was attributed to the layoffs of automobile workers.

### Earnings rise

Notwithstanding the reductions in the work week in the automobile plants, the average work week for industry as a whole continued to exceed 40 hours and the average factory worker continued to earn more than \$78 a week.

Hitting an annual rate of \$317 billion in April, total personal income was 6 per cent higher than a year ago. Most of the increase resulted from enlarged wage and salary disbursements. Agricultural income continued to fall below the year-ago level.

### Failures jump

Business failures climbed 18 per cent in May to 1,164, only slightly below the post-war peak of 1,170 in March. Up 22 per cent from a year ago, more concerns failed than in any May since 1940. In fact, the current toll for the month was exceeded only twice, in 1939 and 1940, since 1933.

Failures occurred at a rate of 49 for each 10,000 enterprises listed in

### FAILURES BY DIVISIONS OF INDUSTRY

(Current liabilities in millions of dollars)	Number	Liabilities		
	5 Months	5 Months		
	1936	1935	1936	1935
Mining, Manufacturing	1026	93.3	74.2	
Mining, Coal, Oil, Misc.	16	26	5.7	2.4
Food and Kindred Products	90	63	5.6	5.2
Textile Products, Apparel	277	207	19.2	10.3
Lumber, Lumber Products	178	131	11.8	5.8
Paper, Printing, Publishing	45	48	3.1	2.2
Chemicals, Allied Products	22	21	10.7	1.5
Leather, Leather Products	42	38	2.7	2.1
Stone, Clay, Glass Products	14	21	2.4	1.2
Iron, Steel and Products	53	64	5.1	6.8
Machinery	133	123	16.2	21.3
Transportation Equipment	27	22	2.2	2.3
Miscellaneous	167	166	11.7	13.1
WHOLESALE TRADE	546	517	24.7	20.4
Food and Farm Products	115	128	4.2	5.4
Apparel	27	30	1.2	1.0
Dry Goods	17	18	0.3	0.7
Lumber, Bldg. Mats, Hdware	76	56	4.7	3.1
Chemicals and Drugs	16	15	0.3	0.4
Motor Vehicles, Equipment	28	28	1.2	0.7
Miscellaneous	267	242	12.7	9.2
Retail Trade	2656	2371	66.1	52.2
Food and Liquor	424	355	6.1	7.3
General Merchandise	118	82	5.5	2.9
Apparel and Accessories	540	388	10.7	7.3
Furniture, Furnishings	339	359	10.8	10.7
Lumber, Bldg. Mats, Hdware	153	136	5.0	3.8
Automotive Group	299	204	11.3	4.6
Eating, Drinking Places	463	435	9.8	9.4
Drug Stores	62	60	1.5	1.4
Miscellaneous	258	252	5.3	4.8
CONSTRUCTION	702	535	39.0	32.5
General Bldg. Contractors	268	174	21.0	18.7
Building Subcontractors	394	331	15.9	12.1
Other Contractors	40	28	2.1	1.7
COMMERCIAL SERVICE	421	359	13.4	12.5
TOTAL UNITED STATES	5391	4712	236.5	191.8

(Liabilities are rounded to the nearest million; they do not necessarily add to totals.)



AHEAD OF THE PROCESSION in design—with its Take-up Jaw—balanced, easy-gripping action—HANSEN has proved to be "the modern way to do all kinds of tacking and fastening operations."

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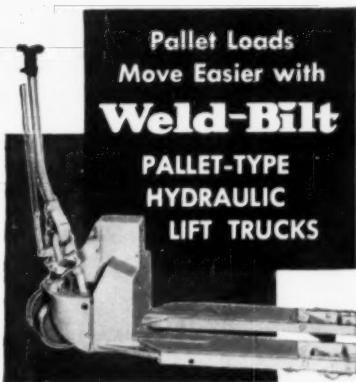
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## The Trend of BUSINESS

the DUN & BRADSTREET Reference Book, as reflected in DUN's FAILURE INDEX. The index projects monthly failures to an annual basis and adjusts for seasonal variation. This was the highest rate for any month since 1942; it compared with 42 for each 10,000 in May 1955 and 66 in pre-war 1940.

Liabilities rose more sharply than the number of casualties, increasing 43 per cent to a post-war high of \$59,901,000. More businesses succumbed than in April in all size groups except the \$25,000 to \$100,000 class. Small casualties involving losses under \$5,000 were the most numerous since 1942. The toll among big failures in excess of \$100,000 was more than twice as large as a year ago, while mortality in other liability classes ranged 10 to 20 per cent above 1955.

More businesses failed than a year ago in all industry and trade groups. The sharpest upturns from 1955 occurred in manufacturing, 46 per cent above the previous May, and in wholesaling, up 36 per cent. Casualties among manufacturers exceeded last year in all industries except iron and steel. The wholesaling increase, on the other hand, was concentrated in the building materials trade.

### THE FAILURE RECORD

	May 1956	April 1956	May 1955	P.C. Chg. I
DUN'S FAILURE INDEX*	51.3	45.2	43.7	+17
Unadjusted	51.3	45.2	41.6	+18
Adjusted, seasonally	48.9	42.2	41.6	+18
NUMBER OF FAILURES	1164	985	955	+22
NUMBER BY SIZE OF DEBT				
Under \$5,000	194	137	163	+19
\$5,000-\$25,000	579	489	484	+20
\$25,000-\$100,000	278	279	253	+10
\$100,000 and over	113	80	55	+105
NUMBER BY INDUSTRY GROUPS				
Manufacturing	245	186	168	+46
Wholesale Trade	118	92	87	+36
Retail Trade	575	563	499	+15
Construction	132	153	121	+9
Commercial Service	94	91	80	+18
(LIABILITIES in thousands)				
CURRENT.....	\$59,901	\$41,871	\$34,714	+73
TOTAL.....	60,334	42,666	34,840	+73

\*Apparent annual failures per 10,000 listed enterprises, formerly called DUN'S INSOLVENCY INDEX.  
†Per cent change, May 1956 from May 1955.

BUSINESS FAILURES include those businesses that ceased operations following assignment or bankruptcy; ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors out of court.

CURRENT LIABILITIES, as used in The Failure Record, have a special meaning: they include all accounts and notes payable and all obligations, whether in secured form or not, known to be held by banks, officers, affiliated companies, supplying companies, or the Government. They do not include long-term, publicly held obligations. Offsetting assets are not taken into account.

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624

# Turning Points

L. F. WHITTEMORE



Chairman of the Board, BROWN CO.

**WHITTEMORE** "After returning from World War I in 1919, I found an opportunity to work for the New Hampshire State Tax Commission as an accountant. In 1922 the chairman of that commission put me in charge of an estate carrying on an active lumber business doing about a million dollars a year. I was at that time 28 years old and, while I had worked in the woods, I was without experience as a lumber manufacturer. I ran that estate for three years, successfully, I think, but when the estate was settled, the family of the deceased took over. I decided to leave them although we were close friends and have remained so ever since.

"The Supreme Court of New Hampshire appointed me tax commissioner of the state before I was 31 years old. At the end of five years I decided that this endeavor did not offer enough of a career, since in the meantime I had started a lumber business of my own with a partner.

"At first we rode high on the wings of success, in a small way but significant to youngsters. Our main outlet happened to be a company which manufactured chairs through prison labor. Congress suddenly passed an act forbidding shipment of prison-made goods in interstate commerce. All contracts were cancelled at a very embarrassing time for us. I learned what 'force majeure' meant in that way. The losses were relatively heavy, and the growing Whittemore family went on a strict budget for a number of years. At least one third of my gross earnings were applied to eradicating bank loans. Probably that experience coming in 1929 and 1930 did more to influence my business career than any

What makes a man successful? The question has always defied glib answers and is most profitably explored on an individual basis. In most men's experience major decisions translated into action have proved to be at least "Turning Points." Mr. Warren Vierow has asked several major business leaders to relate the personal decisions that did the most to place them on the path toward success. Here are two more of the many answers Mr. Vierow received.

DON G. MITCHELL



Chairman of the Board, SYLVANIA ELECTRIC PRODUCTS, INC.

other. The habit of budgeting expenditures became ingrained in our family and we have all lived on that basis since. It has been productive of savings and of thought habits which lead to a sense of well being I had not previously thought important.

"The determination to pay off my obligations rather than seek the ease and comfort of bankruptcy helped establish my reputation to the extent that I was asked to be a director of one of the banks to which I was indebted."

**MITCHELL** "As I look back over the past 20 years, I recall two decisions which seem to dominate the others. As you can well appreciate, in the first several years after college I was completely absorbed in the very act of working and learning what it was all about. Then, as I realized I was making a certain degree of progress, I deliberately backed away from the trees and began to take some long, hard looks at the forest. And I made these two important decisions.

"First, I decided that I would not only make decisions but that they would be *objective* decisions, based upon a reasonable combination of past experience and analysis of the future. It seemed to me then, and it has been increasingly evident to me over the years, that the actual decision you reach is not, in the final analysis, quite as important as the very fact that you were willing to make an objective decision in the first place.

"To those accustomed to making up their minds systematically and thoroughly, this may

seem to be a rather simple process, but it is not simple at all. A great many people simply *have never made up their minds to make up their minds*. They may seem to be doing so, but they are really only going through the motions and are actually letting someone else do it for them.

"The second decision may not seem to be related to the first but indeed it is, in the broad sense. I decided that I must never lose sight of the basic fact that the individual, his rights, and his interests are always foremost. Human beings cannot be slotted into pigeon holes; they cannot be made to lose their identities. However, I do not mean 'individualism' in a sense that the group or society as a whole would be harmed. Individuals must be regarded as parts of a group, and they cannot isolate themselves in modern society. In modern industry, impressive as our plants and machines may be, the unalterable fact remains that only people working together make things; no machine ever made anything.

"Regardless of the products a company makes and the size of its operations, the company whose management ignores the individual will submerge itself. The growing, progressive business organization is the one which is based on the individual's initiative, imagination, integrity and over-all well-being.

"The individual must also be aware of his responsibilities. The person who stands out is one who willingly works a little harder and a little more effectively than the others. There is plenty of room at the top for the man who does more than is expected of him."

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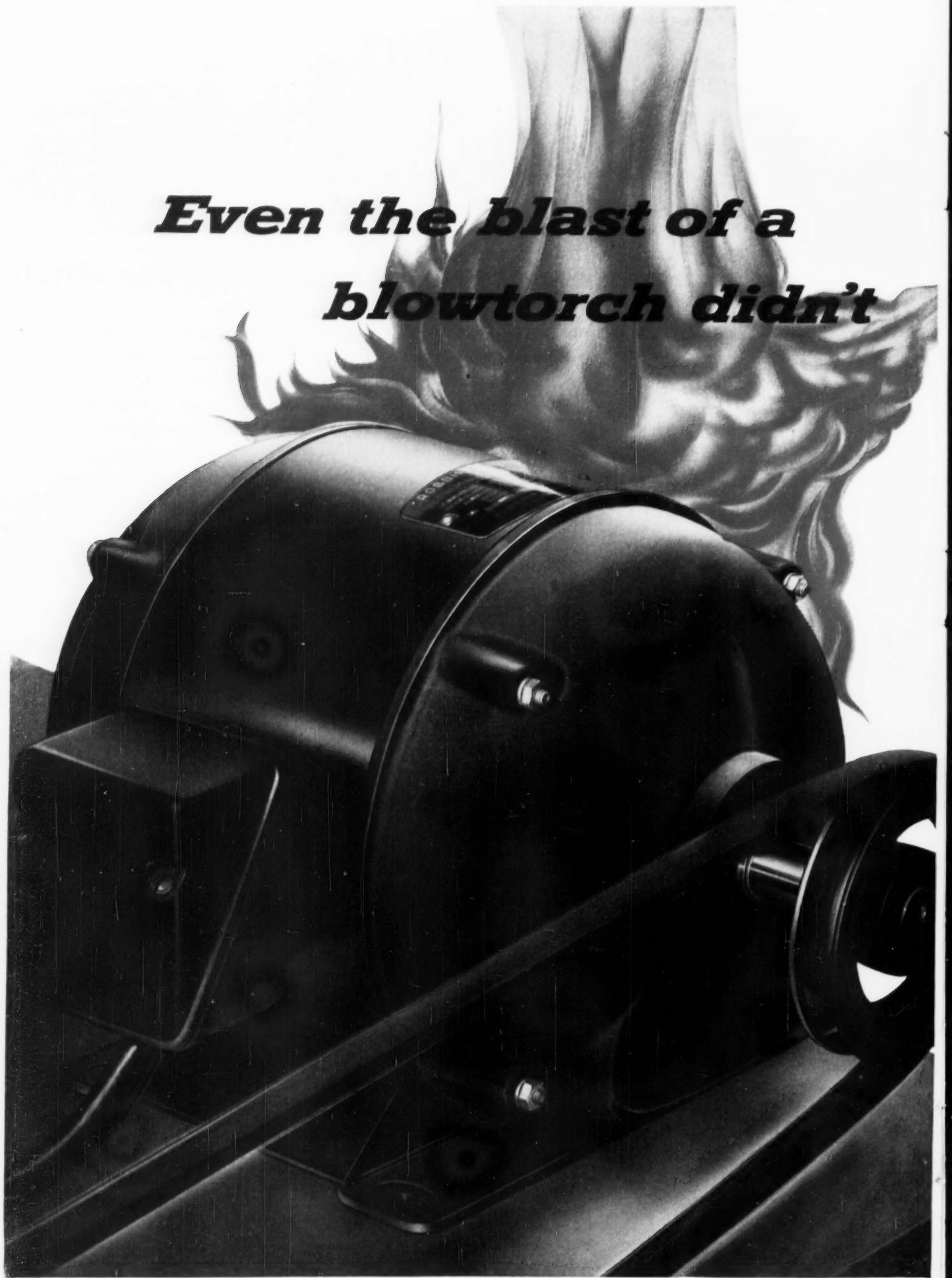
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To show how R & M motors shrug off heat, a standard R & M "All-Weather" Motor was run for two hours—with a blowtorch pointed directly at it. At the end of the test you could fry an egg on the shell in seconds; surface temperature was 298° F. But *inside*—where coolness counts—temperature stayed at 167° F. Winding and insulation remained in perfect condition!

There's an important moral to this test, even though you'd never subject a motor to such extreme heat in your plant. Overloads have the same effect on a motor; so does exposure to hot sun. R & M motors are designed to circulate air

at unusually high velocity—from *one end clear through to the other end*. R & M "clean-sweep" ventilation not only carries off motor heat, but also prevents build-up of dust and dirt in the cooling passages. And for extra protection, openings are screened—at no extra cost to you.

A foundry in the midwest is one of many users who swear by R & M Motors because of "clean-sweep" ventilation. One of their motors has seen 11 years of service on a blast furnace charging crane. Hot work—but the R & M motor still runs perfectly! You can expect the same top-flight service in your plant.

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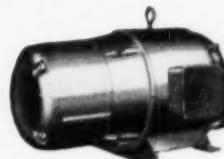
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MI



*The Conference / by Ken Riley*

## *"Gentlemen, I have their letter here..."*

In a few moments that letter will be passed around to the members of the board. Let's hope it makes the proper impression, for here is where the big buying decisions are made.

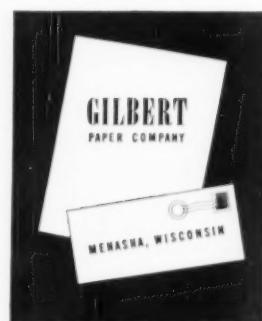
Actually, it could be your letter on your letterhead . . . on your choice of paper. A Gilbert Quality Bond Paper would go a long way toward telling these men that your company is efficient, businesslike and makes

a quality product. Gilbert papers lend authority to any written message with their crisp feel, snap, unmatched brightness and rich cockle finish. It is the carefully selected new cotton fibres used in the manufacture of Gilbert papers that make these qualities possible. Be sure your letterhead does a forceful selling job for your product or service. Ask your printing supplier about Gilbert Quality Papers.

## Gilbert Quality Papers

**Gilbert Bond, Resource Bond, Radiance Bond, Lancaster Bond**

A GOOD LETTER IS ALWAYS BETTER / WRITTEN ON A GILBERT BOND



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# COURAGE AND COMPETITION

All values are relative. There's no better evidence of this fact than the alarm exhibited by some business men at recent minor shifts and dips in the economy. With the Gross National Product bumping along a \$400 billion ceiling, employment hovering around 65 million and unemployment running less than 4 per cent of the civilian labor force, some manufacturers, merchants, labor leaders, politicians, and business writers are concerned with the brief pause in the ascent of the economy toward new heights. Is this concern justified?

Actually we appear to be witnessing a mere tempering of our rate of climb. Despite inflationary surges, there have been huge net gains in the physical assets and financial well-being of the nation since pre-war days. In physical terms, (constant 1955 prices) Gross National Product rose about 90 per cent between 1940 and the first quarter of 1956. And on the same basis, spendable income per capita jumped over 50 per cent during this period despite large growth in personal taxes and population. That's real progress.

Of course automobile sales are down. The high pressure campaigns of 1955 pre-empted some of the 1956 sales potential, and pulled the market off balance for a few months. However, it seems safe to expect a resumption of heavy buying in the Autumn, when 1957 models make their appearance.

Continuance of the decline in housing starts during the first quarter worries the man with his eyes glued on the index of homebuilding activity. However, the slight advance in starts in April, coupled with the recent trend in contract awards suggests that new housing will be somewhat larger over the rest of this year. In any case, the first quarter drop in total

outlays for housing was more than offset by further expansion in other kinds of construction.

Purchases of farm machinery, too, have fallen off somewhat. But again the dip has been outweighed by advancing sales of other types of fixed capital and it appears certain that over-all outlays for equipment will set an all-time high this year.

A change of pace is not only understandable, but it can be desirable. The human pulse retards and accelerates and even nature has its variables in the short-term cycles with its wet seasons and dry seasons. If there wasn't a little uncertainty, an element of risk, an occasional halt or even set-back, there wouldn't be any fun in overcoming inertia and regaining momentum.

The truth is this: We have been riding high on a small investment of management ingenuity. There are very few hands at the helm to-day that have weathered financial storms of a depression intensity. Few indeed, have been tested by a year of sustained adversity. It is a bit of a challenge to meet a tough competitive situation, and it is good exercise for management muscles to feel a bit of strain when expenses are rising and sales tapering off.

Since 1946 our record has been one of almost continuous growth, interrupted by nothing beyond a couple of recessionary ripples. A glance at any ten-year chart of key indices of the nation's economy will reveal this in the most dramatic fashion. So far this year dollar spending has not fallen off but merely risen at a slower rate than in 1955.

At worst we shall experience no more than a slight wobble—partly seasonal—

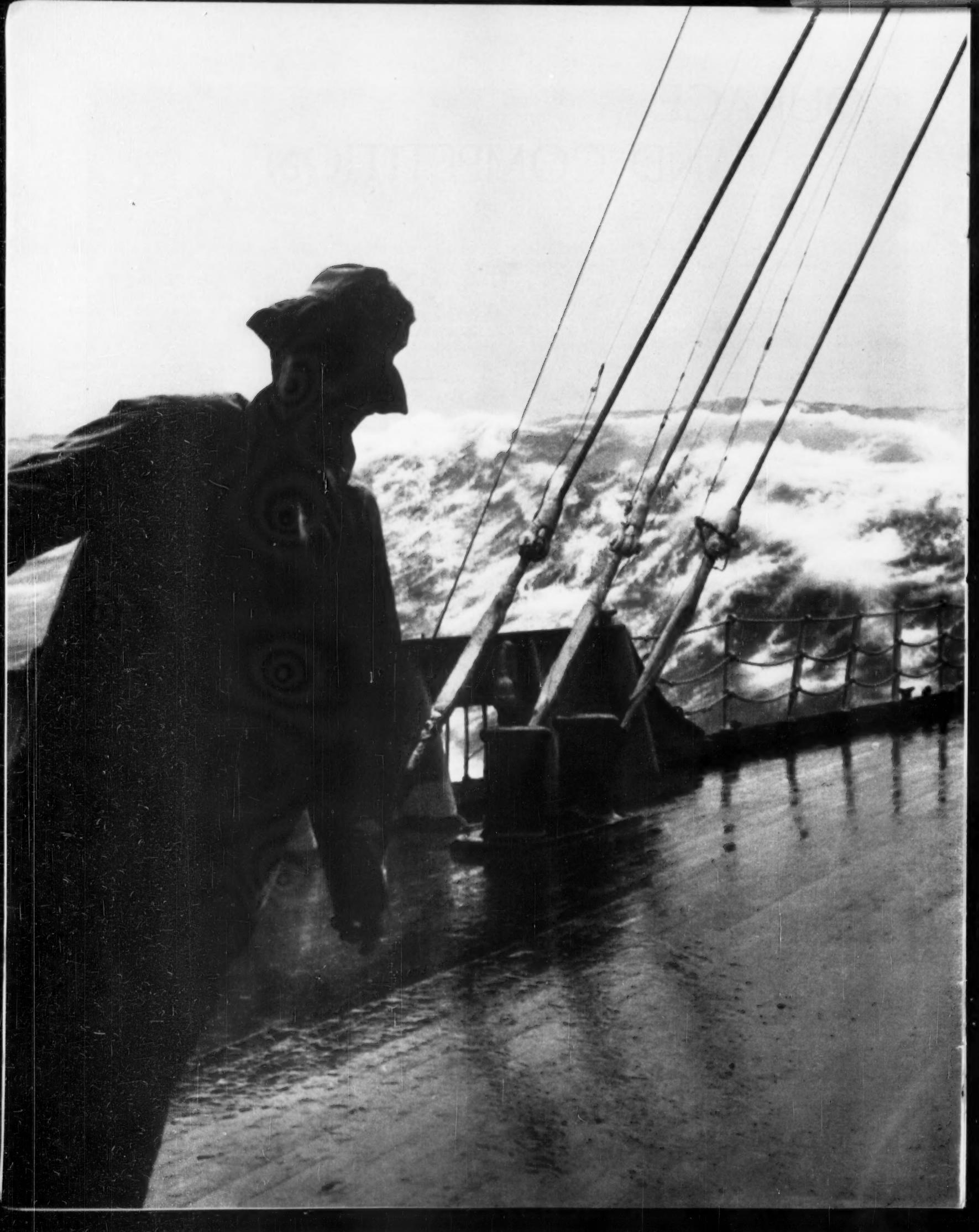
during the Summer months and another forward thrust seems certain to occur in the coming Fall and Winter. The real test of the health and progress of the nation is psychological rather than statistical.

People buy what they want, not necessarily what they need. They buy emotionally, rather than logically. When they are impelled by confidence, they spend freely, and they occasionally project their buying power into the future to a point where it creates a temporary strain. The lag that follows in sales volume is often a healthy adjustment in the anatomy of distribution.

It is important to remind ourselves, that our prosperity is based on a generous level of living. It is impelled by the philosophy of plenty. Yesterday's luxuries are to-day's necessities without class distinction. Our prosperity cannot exist on subsistence levels. Yet there comes the day of accounting when the law of supply and demand must be recognized, when adjustments must be made, and the tested principles of economics acknowledged. These are facts the courageous business man faces knowing that they are normal events in a moving economy and not necessarily symptoms of weakness or failing strength.

It is the "fraidy-cat" of a lush day in business who cries out for a life-preserver when the water gets up to his ankles. Few indeed are the companies which have had a sustained year in the red since 1940, or remember the depression years when it took shrewd management ingenuity to fight the tide and stay afloat. Now is the time to use some imagination and courage as well. There are more people to serve, more goods to sell, and more profits to earn than ever in our history.

*The Editors*



*A company's own employees can be its best critics or its best ambassadors. They form a force of public relations potential too often neglected. Putting public relations back on a personal plane is a major problem of any large business. Here is one company's answer.*



## YOUR MOST IMPORTANT SPOKESMEN

KEITH S. McHUGH  
*President, New York Telephone Co.*

**W**HAT IS the most effective force a company can utilize to create good public relations?

A recent occurrence in one town demonstrates how information in the hands of an employee can mean the entire difference between good public relations and bad.

In this particular town, plans were announced about the change of telephone service from manual to dial—presumably good news for any community.

The people in this town were told about the industry's program for eventual direct dialing clear across the country and how this new service would fit into the nation-wide plan.

Apparently we failed to tell the whole story. The announcement did not succeed in making clear the need for changing telephone exchange

names to standard designations to eliminate a potential cause of mistakes in dialing.

The tempest really struck when the people found that the proud old name of their town would be dropped from the telephone numbers. The local newspaper came out with a hot editorial against the change. Politicians and civic groups joined the battle. We were in a spot.

It was during this fray that one of our plant men went to the regular monthly meeting of his local church men's club. He had probably looked forward to attending an affair where he wouldn't have to answer questions or explain the company's proposal, as he had been doing on the job for the past several days. Imagine his surprise when one of the members stood up and proposed a resolution that the club go on record as opposing the company's plan.

So what did the plant man do? He stood up and explained just why the change was necessary. He did an excellent job, putting the case across in his own words. The resolution was voted down. The remarks of that one company employee had greater impact on the members of the community than all the advertisements and news releases that could have been written.

This incident affords a dramatic illustration of the kind of real and effective work employees can do to help build public relations. The installer handled this public relations problem in much the same way that the owner of the successful small business would—personally and by listening and talking to people. Well-informed employees with the kind of interested and proprietary attitude of this installer put our policy of furnishing explanations the public expects

and demands into human terms.

Most of the public relations problems and objectives that confront any business to-day are fundamentally the same ones that were once handled face to face between the owner of a small town business and the members of the community where he operated.

Let's take a look at the small town entrepreneur. His public relations—he'd probably

### "The roof please"



"... as companies grow, new problems arise in their relationship with the public."

laugh at such a label for his relations with the community—are concerned with the same problems of telling and listening, of talking with the public.

He has some natural advantages over a larger business. He lives in the community he serves; his customers are also his neighbors. The owner-manager of the small business is immediately responsible and readily accessible. He can talk in person with his public.

American people like business to be conducted on a personal basis. But as companies grow, new problems arise in their relationships with the public. The personal relations of the home town business give way to the public relations of a widespread corporation. Management is moved farther and farther from the people the business serves. Only through its employees can a large company bring to its dealings with the public the personal element that is a prime virtue of the small business.

We've seen for example that it makes a big difference if an employee is willing and able to answer the question of an inquiring acquaintance instead of saying, "I don't know, that's not my department."

The operator or accounting clerk who replies to a customer's question with a rhetorical one of her own, "How should I know?" unconsciously gives the answer herself in the after-thought, "I only work here." Whether she accepts it or not, her job with the company has made her a representative of the business.

The employee's ambassadorship role is readily apparent in a business such as ours which is selling a service. Is it important in other industries? A steadily increasing number of companies think so and have taken steps to strengthen the relationship between employees and the community—local or nationwide.

Newspaper accounts of Public Service Commission hearings on a request for higher telephone rates help to tell the public why we need the increase. But how much better it would be if we could tell our story in person, through the give and take of conversation.

Friends and acquaintances of telephone company employees and the customers our people meet on the job often say something like, "I see your company wants an increase." Many telephone men and women take this opportunity to explain why higher rates are needed. While they may have only a few of the facts reported in a press release, their discussion is more effective because it is personal.

This is only the bright side of the coin. Every personal contact in our business isn't always the kind we can be proud of, either in terms of friendly, courteous service or in the matter of informed and articulate representatives. The public tells us, too, about employee's shortcomings.

Management hears about them because there is just one group that the public finally holds responsible when things go wrong. It's not primarily the installer, the operator or accounting clerk; it's their bosses—management.

Almost without exception, letters of criticism about our employees are addressed to management. These letters are proof of the fact that the public holds management responsible for any unsatisfactory action by an employee. This is probably true of any business.

Let's look a little further into this matter of the public relations role of the employee.

For nine years the Bell System companies have regularly conducted customer surveys in an attempt to find out what the public thinks about the company.

One of the things measured is customers' attitudes toward the company in general. Through the answers to a series of questions we have come up with an arbitrary index based on a possible maximum score of 100 points.

Among other things, we ask the customers if they know any telephone people who talk about the business. Through these answers we can divide the customers into two groups—those who know telephone people and those who don't. Comparing the attitude-toward-the-company index of these two groups, we find the average of those who know telephone people who talk is consistently over 20 per cent more favorable.

This statistical evidence running consistently through year-to-year surveys has served as the prime mover in our program of building an informed employee body willing to talk about the business.

There are many questions still unanswered about the role of employees as public relations

ambassadors, but one thing is certain—it doesn't just happen. As in any kind of progress, it takes study, planning, organization, and the carrying out of effective programs.

Delving into the reasons why some employees talk and others are relatively quiet, we have come up with significant leads as to what can be done to develop employee ambassadorship.

An employee's basic job attitude is actually more important to his public relations effectiveness than how much he is told or how much he knows about the business.

The employee's performance as a representative of the business is in large part governed by how he feels about his job and the company. Even how he receives and appraises the information the company gives him is affected by these basic job attitudes.

The degree of good ambassadorship the employee displays to customers rests firmly on such variables as what he thinks of his boss, how he feels about his chances for advancement, his pay, the soundness of his craft training, his fund of information about the business, and his relationship with his co-workers.

Is he proud to be identified with the company? Does he share interests and accept common goals with other members of the local team? Does he feel informed about his job?

Management is vitally concerned with the answers to these questions, for they afford a good measure of attitudes that determine the nature

### "I like your looks, Mac—lay off the lamb stew."



"... building an informed employee body willing to talk about the business."

of the employee's relations with the public. And management's discovery of its responsibility for the employee's role in public relations requires a new look at just about every aspect of the business.

Nothing more clearly pointed this up to us than the experience of our company with the organization of operating groups.

In metropolitan areas such as New York City, there had been a tendency over the years to centralize telephone operations. Functional concentration of switchboards, billing centers, and business offices found us moving departmental operations to various central points, widely

*Continued on page 54*



How clean is *clean*? This is only one of many puzzling questions that industry can answer with the aid of tracer atoms. Visual tests for cleanliness of textiles, metals, and machined parts provide a rough answer. But when radioactive "soil" is used, even the tiniest amount of dirt remaining after washing can be detected. Here, Westinghouse Electric technician tests cloth samples before and after cleaning an automatic washing machine. Metal fabricators can use similar technique to test solvents for removing extrusion compounds and preservatives.

## TRACING PROFITS WITH ATOMS

ANNESTA R. GARDNER  
*Industrial Editor*

### Tracers apply here

*Radioactive tracers can help study, measure, and control these factors ↓ . . . . . in industries like these □*

	Primary Metals and Metal Workings	Glass and Ceramics	Paper	Textiles	Rubber	Food Chemicals Drugs
Melting and mixing rates	✓	✓	✓	✓	✓	✓
Maintenance of protective linings for tanks, reactors, and furnaces	✓	✓	✓		✓	✓
Effects and sources of impurities	✓	✓	✓	✓	✓	✓
Rate and degree of wear	✓	✓	✓	✓	✓	
Action of cutting tools and means for prolonging their life	✓	✓				
Effectiveness of soil removal—action of solvents, detergents, and washing machines	✓	✓	✓	✓		
Diffusion and dispersion of alloying elements, dyes, and pigments	✓	✓	✓	✓	✓	✓
Density and uniformity of coatings and printed markings	✓	✓	✓	✓	✓	
Moisture permeability of coatings and packaging materials; moisture pickup of foods, drugs, chemicals	✓	✓	✓	✓	✓	✓
Flow of liquids through pipelines (including detection of leaks and obstructions)	✓	✓	✓	✓	✓	✓

A MANUFACTURER of protective coatings can now prove that his primers will penetrate through heavy layers of rust on steel.

A food processor has improved the effectiveness of his veterinary products.

Soap and detergent manufacturers have a new measurement for cleanliness; and producers of ceramic and plastic dishes, and of synthetic and natural fibers, an effective way to evaluate the cleanability of their materials.

A cement manufacturer is better able to control charging of rotary kilns.

The manager of an old plant whose piping diagram disappeared years ago (if, indeed, it ever had one) now has a brand-new chart to save countless hours in maintenance time.

A foundry is paring downtime and maintenance costs because it now has a way to tell exactly when refractory furnace linings need replacement and prevent premature or dangerously-late shutdowns.

What are these new methods? They are all tracer techniques, based on use of radioactive and stable isotopes—by-products of our atomic energy program.

These isotopes are atoms—basic building blocks of all materials. But they are atoms-with-a-difference. Chemically, they act much like ordinary atoms—like atoms of iron or carbon or sodium or any one of the other elements. But they do differ from ordinary atoms in one important way: An isotope's nucleus is just a little heavier or a little lighter than that of the normal atom. Sometimes, this weight difference makes the atom unstable so that it tends to "decay" and give off radiation as it does so. Such an unstable atom is a *radioactive isotope* (radioisotope for short). Other isotopes, which manage to maintain their equilibrium, are *stable isotopes*.

Both types of isotopes can be used as tracers.

## *Food and Agriculture*



Irrigation studies are aided by radioactive tracers. Hawaiian Sugar Planters' Association agronomist uses radiorubidium to study distribution of irrigation water, leaching of soils.



Fertilizer utilization is studied by placing radioactive phosphorus compounds in soil, then measuring amount taken up by sugar cane plants. Here, HSPA biochemist uses counter for leaf check.



New instruments for weighing bagasse (above) and measuring soil density (right) are an outgrowth of HSPA work with radioactive tracers.



Plant nutrition research makes use of stable nitrogen isotopes as well as radiophosphorus. These tests help HSPA find out how various nutrient compounds are used by sugar cane plants.



Soil density is checked by measuring amount of radiation which gets through from calibrated isotope source (right) to the radiation detector.

But it is the radioactive isotopes which are the most interesting and important. This is because the radioactive atoms will go through all the usual manufacturing and processing operations, just as ordinary atoms do; yet they are permanently tagged or labeled by their radiation so that their progress can readily be followed—even from a distance. In effect, each radioactive atom carries its own built-in "radio" transmitter and broadcasts continuous reports on its position.

If a small amount of radiocobalt is introduced into an underground pipeline, it is possible, using a radiation-detection instrument like a Geiger counter, to trace its progress from above ground. That makes it easy to reconstruct piping diagrams and to detect obstructions in pipelines and pneumatic tubes.

Likewise, to study the flow of material in a cement kiln, radiocalcium can be added to the raw feed at the inlet end and its course can be followed through the kiln by means of a radiation detector mounted outside the kiln shell.

### **They Can Do Many Jobs**

Radioisotope techniques are remarkably adaptable. In the cases just cited, the radioactive atoms are introduced into the materials being processed or tested. In other cases, atoms already in the material are made radioactive in place by exposing them to neutrons in an atomic reactor.

If, for instance, one wants to use radioactive materials to study wear of machine parts, the radioactivity can be applied to either the stationary or the moving part, and it can be applied in at least four different ways:

1. The part can be fabricated from "ordinary" materials and then made radioactive by exposure to nuclear radiation in an atomic reactor (see piston ring example, page 38).

2. Radioactive compounds can be added to the metal from which the part is to be made while that metal is being melted and cast.

3. Radioactive inserts and collars can be applied to strategic points of the parts under study.

4. Wearing surfaces can be electrolytically coated or marked. (New developments here include a diffusion technique and a method for introducing the radioisotope through the electrode used in electrical discharge machining.)

In every case, the atoms serve as markers or guideposts, always ready to sound off for the researcher or production man. He can receive their signals in several different ways:

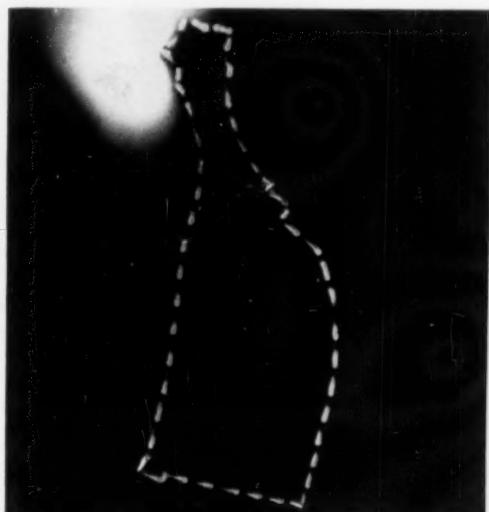
Radioactivity can be measured with such instruments as Geiger and scintillation counters and radioactive atoms can be made to take their own "pictures" on x-ray plates (see page 37). (These pictures, known as *autoradiographs*, are particularly useful because they serve as a permanent photographic record. The degree of exposure of the film is a measure of the amount of radioisotope present.)

Stable isotopes are not quite as easy to follow or measure, since they do not give off radiation and can be detected only on the basis of tiny weight differences (using such instruments as

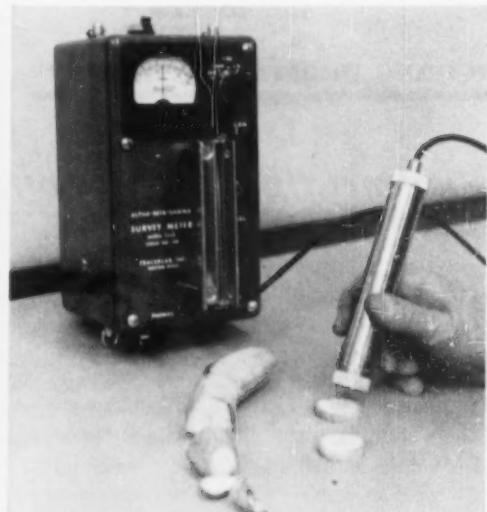
## Rubber and Tires

### AN AUTORADIOGRAPH

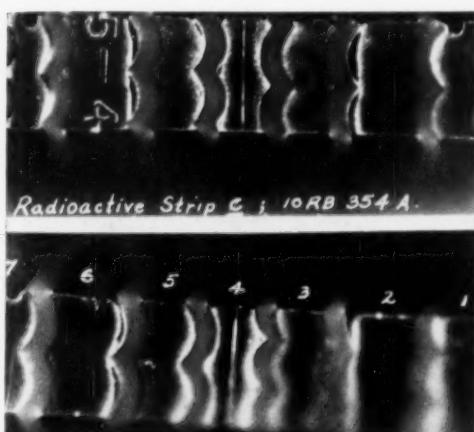
Better bananas, longer-lasting tires, and lower plant maintenance costs are only a few of many achievements which can be traced to tracer research at B. F. Goodrich Company. In the banana study, for instance, the question was whether a chemical, used to keep cut ends of banana stems from rotting, would migrate into the fruit if the stems were cut short to facilitate handling. The answer, a welcome "No," was obtained by painting the cut stem ends with isotope-labelled samples of the protective chemical, and then, after a suitable interval, checking for radioactivity in the fruit.



**Rubber chemical**, painted on cut ends of banana stems, prevented stem rot. But Goodrich wanted to make sure it would not migrate into fruit pulp, used isotope-labelled compound to find out.



**Geiger counter check** of banana sections finds no unusual radioactivity, proves chemical has not migrated into fruit. Autoradiographs (left) gave same result, compound was okayed for use.



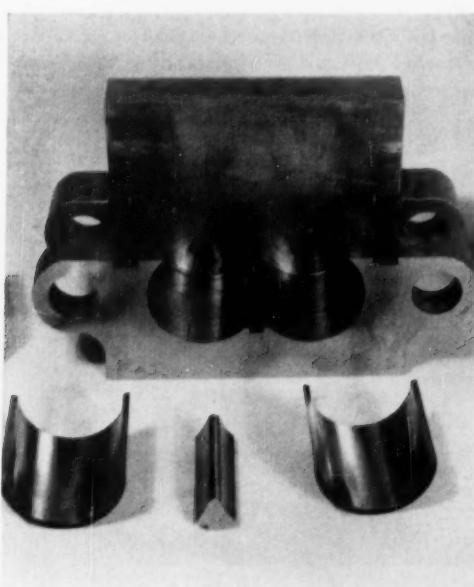
Tire wear can be measured in several ways with tracers. Here, radioactive layer is placed inside tread. Amount of radiation which gets through photographic plate indicates degree of wear.



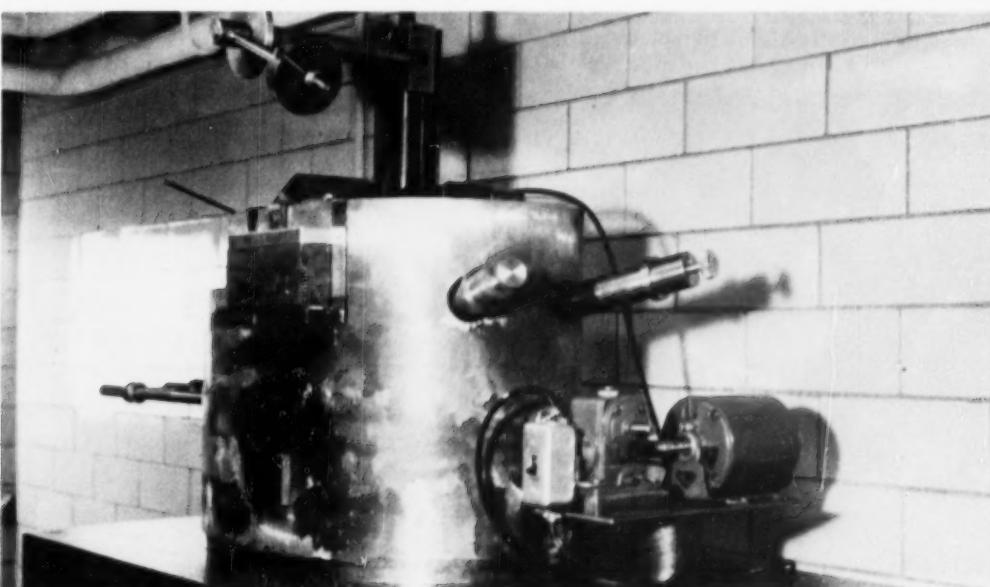
When tread itself contains radioactive material, wear can be detected by autoradiograph (above) or geiger counter (right) that show how much rubber is abraded and deposited on the road.



**Geiger counters** can be used to check decreasing thickness of outer layer when radioactive inner layer is used; or to measure amount of radioactivity deposited on roadway by radioactive tread.



**Irradiated liner inserts** are used in studies aimed at prolonging life of rubber mixing machines. Tests show abrasiveness of rubber chemicals.



**Heavy shield** protects plant personnel when radioactive liners are installed in rubber mixing machine. By monitoring mixture for amount of radioactivity which is worn off mixer wall and carried away by the slurry, it is possible to obtain an indication of the abrasiveness of the various chemicals used.

## TRACING PROFITS WITH ATOMS

### Oils, metals, and machines

Tracers can answer many questions in alloying, metalworking, machine design, and lubrication. In studies ranging from measurement of piston ring wear to research on solid state diffusion, isotopes have made it possible to measure the "un-measurable" and pin down the elusive. Tracer techniques are so sensitive that they can even detect the amount of wear which takes place during two revolutions of a lathe spindle (lower right).

To-day, almost every oil company and auto manufacturer, many machine tool builders, and a host of metal product fabricators use radioisotopes to study metal casting and electrodeposition, corrosion, wear, cutting action, and lubrication.



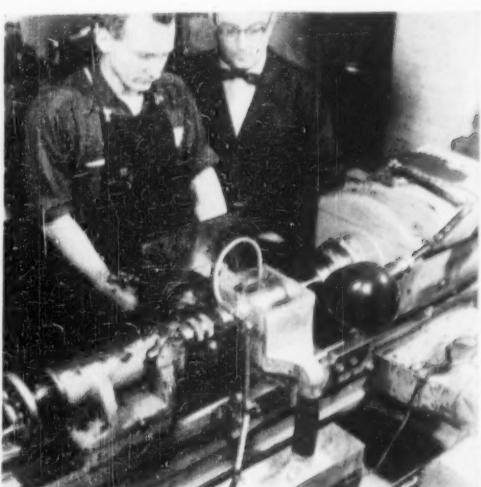
**Hot piston ring** is used by Esso Research and Engineering to measure efficiency of lubricating oils. Rings are made radioactive by exposure to neutrons in a nuclear reactor; then installed in test engine. Note care with which they are handled.



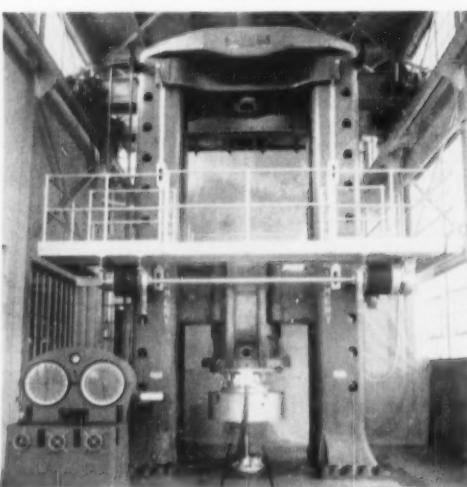
**Wear tests** can be made under actual operating conditions. Here Esso Research technician checks radiation level to make sure driver will be safe.



**As piston rings wear**, radioactive metal is picked up by lubricating oil. Amount of wear can then be determined by measuring radioactivity of oil samples. Here, Esso Research shows two ways measurements can be made: with multi-scaler (left background) and flow counter (right foreground).



**Machinability of alloys**, efficiency of tools, and suitability of coolants are evaluated in tests with radioactive tracers at Alcoa. Note safety shield, and the box used to confine radioactive chips.



**Radioactive plugs** in extrusion billets help Alcoa chart the flow of metal as it is formed in presses like this, develop better extrusion alloys, provide data to guide designers of parts and dies.



**Alloying** can be studied by adding radioactive elements to molten metal, then exposing ingot sections to photographic film. Resulting autoradiographs show alloying element distribution.

the mass spectrometer). On the other hand, stable isotopes can be used in cases where radiation might interfere with the process being studied. Too, several key elements (oxygen, for instance) simply do not have radioactive isotopes that are suitable for tracer applications.

The idea of using isotopes as tracers is by no means a new one. Early in the 1920's a few researchers were using naturally-occurring radioisotopes in tracer studies.

But it was not until radioactive isotopes became available in quantity and at moderate cost as by-products of atomic energy operations that large-scale use of tracers became practical. It is for this reason that industrial use of radioactive isotopes dates from 1946—the year that the first shipments were made from the AEC's nuclear reactor at Oak Ridge to non-priority applicants.

Since that time, more than 1,200 industrial concerns have used radioisotopes for product research, process control, and inspection.

Their testimonials to the effectiveness of tracer techniques are glowing. For instance, B. L. Clarke of Merck & Co., Inc. says:

"Improvements in production processes for vitamin B 12 could not have been recognized and taken advantage of nearly so rapidly without the guidance of radioisotope tracer techniques."

### What Holds Them Back?

Still, there are many companies which *could* use isotopes to advantage, but are not doing so. Why not?

In most cases, the answer involves one of three factors: safety, suitability, and security (of company secrets). These three crop up so often in company responses to surveys on isotope usage that they might well be called the "Three S's."

The *security* problem stems from the fact that the AEC-produced isotopes are made in plants built at public expense and it was felt that the public had a right to benefit from discoveries made with them. When isotopes were first made available for industrial use, the AEC, therefore, required that each user file a public report on the results of isotope research. This rule has now been modified, and the AEC says that consideration is being given to industry's desire to protect its own inventions.

(Isotopes produced by non-government facilities are not, of course, subject to this rule. But, at present, the number of isotopes available this way is small and their cost is generally high. As private reactors are built, this picture should change.)

As far as *safety* is concerned, radioactive materials do present hazards—but so do heat, electricity, and water. Radioactive materials can be handled safely by even the smallest companies (see February 1955, page 39). Indeed, if proper precautions are taken, use of isotopes should not affect company insurance rates. In this respect, use of isotopes differs a great deal from reactor operation which presents many special hazards and, right now, is keeping insurance men close

*Continued on page 82*

## Is your plant ready for the atom?

Radioisotopes can help solve a lot of problems; but the smart manager doesn't bring them into

his plant—even for training purposes—until he's checked these points and answered "yes" to most.

### The objective

1. Is the way in which radioisotopes are to be used fully and clearly outlined? Do you know what is to be accomplished; the degree of accuracy required in the results; and the amount of time available for the study? Yes  No

2. Have you investigated other possible methods for solving the problem—use of chemical analysis, dye tracers, and the like? Use of tracers may not be desirable if these techniques can accomplish the desired results with the necessary accuracy in a reasonable period of time.

Yes  No

### The facilities

1. Is your laboratory equipped to handle radioactive materials? Does it have fume hoods, radiation shields, radiation monitors, protective clothing, easy-to-clean work places? Yes  No

2. Is there a locked, shielded vault in which radioactive materials can be stored when not in use? (Even if not required by law, this is important, if only to prevent losses and contamination.)

Yes  No

3. Have you made arrangements for disposal of radioactive wastes, and for laundering of laboratory garments? Yes  No

### Regulations and insurance

1. Are you thoroughly familiar with AEC, state, and local regulations in regard to use of radioactive materials? (Several states are now setting up radiation safety codes; others have regulations stemming from the radium days. The Interstate Commerce Commission has rules on shipment of radioactive materials, and the National Bureau of Standards has developed general safety recommendations.)

Yes  No

2. Has your insurance company been informed of your intention to use radioactive materials? You'll want to be sure use of isotopes will not adversely affect your coverage, and to take advantage of safety suggestions offered by insurance company engineers.

Yes  No

3. Do you have a first-class record-keeping system that will enable you to obtain, and hold for long periods, detailed information on exposure of all employees to radioactive materials? (This helps insure adequate compensation to those who

deserve it, while heading off unwarranted damage suits that might be filed in the future.)

Yes  No

### Employee and community relations

1. Have you set up an information program to explain the need for, use of, and precautions with, radioactive materials to all employees in terms they can understand? This should be done well in advance of the actual arrival of these materials, and can do much to prevent the spread of damaging rumors and needless fears. It will also help to prevent accidental loss and theft of these materials by those who do not recognize them (see page 82).

Yes  No

2. Are you also prepared to inform your local police and fire departments and the community at large (including, of course, newspapers and radio stations) of plans for using isotopes and precautions for their safety? (Here, again, an ounce of advance information is worth many pounds of after-the-fact information. It may save lives, too—as in the case of fire or disaster where local officials may come in contact with the materials unless forewarned.)

Yes  No

### Isotope procurement

1. Have you investigated the various forms in which the isotope you need is available? (The form supplied by the AEC may not be the best one for your use; and nearly a score of private concerns now process isotopes and supply, under AEC regulation, many special "labeled compounds" for various uses.)

Yes  No

2. Have non-governmental isotope sources been investigated? (Some cyclotron-produced isotopes and natural materials like radium are obtainable from private sources. While these are generally more expensive than pile-produced materials, they are free of some of the more-encumbering regulations that surround the latter.)

Yes  No

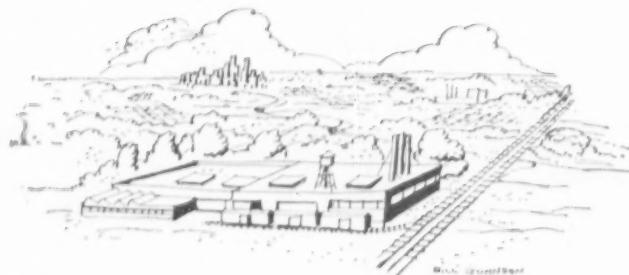
3. Does your purchasing department know the special shipping regulations that apply to radioactive isotopes? (They require special packages, and usually can not be shipped by rail freight or parcel post. Also, if the isotope you plan to use is a short-lived one, arrangements must be made to have it shipped only when you are actually ready to use it, rather than just on the first shipping day after your order is received.)

Yes  No

# POINT OF DECISION

D. W. BLEND

*Vice President, Calumet & Hecla, Inc.  
General Manager, Wolverine Tube Division*



*The experience of more than ten years with multiple management has convinced Calumet & Hecla that it is a way of business life. These practical techniques as applied throughout the company may provide a pattern for other companies to consider.*

EXPERIENCE with the multiple management program has convinced us that undeveloped management talent needs only encouragement and opportunity. To make good use of what you have to work with is, of course, good management. A prime problem of business is to make better use of the abilities that men have. And we are able to get extra management pulling power by what we call multiple management.

Our people are encouraged to ask for and to offer suggestions, and to consider the suggestions in the conclusions or decisions they are required to make. This means keeping the greatest number of people continuously informed about what the company is doing and where it is going.

The objective of all this is to do the best possible job, in the shortest time, at the lowest possible cost. That simply means preserving our business and providing for growth.

To give you a concrete example of the successful operation of multiple management, here is how it works for us.

Our company offers a simple, basic plan of multiple management. Each executive, manager, or supervisor, who has a group of people reporting to him, holds regularly scheduled advisory committee meetings with his people. A typical example is the top division advisory group—the Division Advisory Committee.

The General Manager of Wolverine Tube has eight people reporting to him who represent every phase of the business. These men make up the Division Advisory Committee with the General Manager as the chairman.

Every decision that is reached in a session is

the responsibility of the chairman. This doesn't relieve an individual of any of his accountability. Rather, it strengthens the structure of our organization by requiring that the chairman, whether he be the General Manager, a supervisor, or a general foreman, performs within his responsibility. Wolverine Tube feels that each leader can best do his job if he will seek counsel of the people who work directly for him. They are the people who do the job. They are the people to whom he has delegated responsibility.

Multiple management committees are not joint discussion groups that manage by a show of hands. The chairman makes the final decisions. Decisions are his responsibility.

The groups discuss their problems. Every member is given an opportunity to express his

## MULTIPLE MANAGEMENT

Multiple management is a way of using the best thinking of everyone to improve the decisions that must be made by the responsible individual. It brings decisions as close as possible to the scene of action. And it is a practical way to develop management in the company.

opinion. It doesn't make any difference whether the problem is one of budgets, finance, production, or any other area. Each opinion is given consideration by the chairman in reaching the final conclusion, but the chairman is the man who approves the group's conclusions or makes the decision. This is of primary importance in the function of advisory committees at Wolverine Tube.

In these advisory committee meetings policies are formed, plans are developed, and objectives established to implement the over-all program of the Division. In all cases, it is necessary to evolve ideas and find solutions to problems. The amount of information that flows in and through the sessions is amazing. For example, a Sales Manager contributes soundly to the operation of the Production Sections or the Technical Department because he has an idea and expresses it. Everyone expresses his opinion but, regardless of his position, he also supports the final decision.

It wouldn't be possible to sit down with a variety of items on the agenda and have everybody walk away from the meeting satisfied that everything had been accomplished in exactly the way he felt it should be. There may be five members who are in favor of a point and five who are against it. The important thing is not the deadlock of opinions but, rather, that each member has had a free chance to express his ideas.

In the final analysis, *one* decision is made by the *one* man who has the responsibility. Everyone has had an opportunity to understand it. The final decision spells out the direction in



## How information flows under multiple management

Each member of the top committee is chairman of his own advisory committee. And these members, in turn, are chairmen of committees at the next lower level of management. This procedure spreads information quickly to all parts of the company. Similarly, problems are raised to the attention of the responsible individual along with the facts, experience, and knowledge that can provide the best solution at the lowest practicable level. How it is set up at Wolverine Tube Division is suggested by the partial break-down of the advisory committees which is illustrated on the right.

which the group is going, and everyone is expected to support the action to be taken.

Another important phase of these meetings is dissemination of information. For example, in the top group—the Division Advisory Committee—the chairman feeds down into the group basic information from the corporate level. Fed up through the various group members is a tremendous amount of information about every phase of the business.

Now, let's take a look at a simplified chart of the Wolverine Tube Division. The chart shows a representative group of advisory committees as they break down throughout the Division (see chart at top of page).

The Division Advisory Committee, with the General Manager as chairman, is responsible for the operation of the Division. The members of this advisory committee report to the General Manager and include: the Plant Managers, the Controller, and the Directors of Purchases, Sales, Industrial and Public Relations, and Operations. In studying the organization chart and the discussion that follows, keep in mind that each of this committee's members is, in turn, a chairman of his own advisory committee. The simplified chart is designed only to show a few of the advisory groups.

### Bi-monthly Meetings

The Division Advisory Committee meets six times each year for two days. A great deal of basic work for the Division is done during these meetings, but there's a lot of work done aside from the conclusions that are reached in the meetings. Obviously, meeting every 60 days, the business cannot be run by these meetings alone. Meeting schedules are set a year in advance.

For each meeting an agenda is prepared about ten days in advance. There are some continuing items on the agenda. These are items that are followed and reported on continuously. A typical agenda has from 25 to 30 items, including those carried over from previous meetings, those added by the chairman, and those proposed by the committee members. The agenda is built on the

basis that each item is identified for discussion by certain people.

If it is a matter of the Sales budget, the Director of Sales is the man who is identified. If a check on progress of a development project is an item, the Director of Operations is the man who reports. If a matter of policy is placed on the agenda, the General Manager is identified to discuss the item. In some cases there may be two or three identifications with a topic. This would be a program where several people are vitally interested.

### Meeting Minutes Review Discussions

Comprehensive minutes are issued following each meeting. The minutes are prepared in such a way that the corporate management people, who are interested in what we are doing at the Wolverine Tube Division, can review them and get a good picture of what we are talking about in the Division Advisory Committee. Supplements are added to the minutes at times. These represent materials submitted to the group by a member who is reporting on a specific project.

To give some idea of the scope of activity, here are a few items that have recently been discussed in the Division Advisory Committee:

*Production Schedules*—This item always appears on our agenda for review.

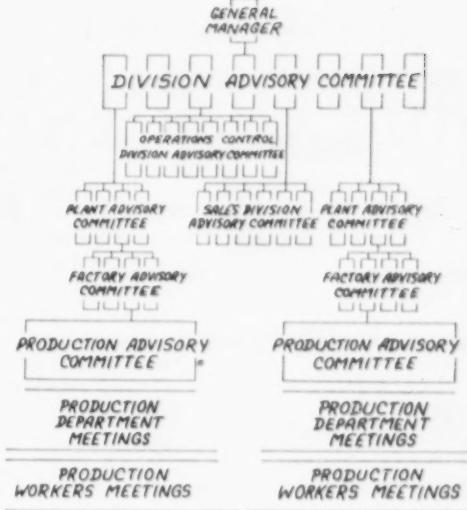
*Patent Infringements*—This point is discussed as a result of thorough and careful study, or of recent investigations.

*Budgets—1955 Results and the 1956 Program*—The cost and profit situation is regularly reviewed (approximately twice a year). At the last meeting of the year, the budget program for the next twelve months is outlined.

*Labor Contract Negotiations*—A detailed review is presented by the Director of Industrial and Public Relations. Within the framework of the group, limitations are established with respect to these negotiations.

*Life Inventory*—Procedures and goals are set up in this area of primary importance in our business.

*Government Contract Termination*—The



winding up of a government contract and the possible future situation resulting from the contract are thoroughly discussed.

*Forward Planning*—A good deal of time is spent in projecting short-term and long-term planning programs.

For every item that goes on the agenda, a decisive conclusion is reached. Following the report on each item in the minutes of a meeting is an indication of what will be done with the item if it hasn't been closed. It may be continued over until the next meeting, or until a later meeting. If the item is closed, it is marked "Dropped from agenda." For every item that goes on the agenda, a firm decision is reached and recorded. The meetings are not just discussion groups—they are designed to get management action.

### Sets the Pattern

This, then, is a brief explanation of the membership, function, and organization of the top committee at Wolverine Tube. The general procedure adhered to by the Division Advisory Committee sets the pattern for the multiple management program.

This type of management operation capitalizes on the best thinking of the greatest number of people and allows decisions to be made as closely as possible to the point of action.

One of the next level of committees is the Operations Control Division Advisory Committee. This group is chairmanned by the Director of Operations and consists of Technical, Engineering, Product Development, Production, Production Planning, Inspection, Industrial Engineering, and Traffic Managers. Its function is to advise the chairman, Director of Operations, on the co-ordination of all operations activities throughout the Division. This includes development work on new equipment, processes, and products. The members are responsible for the co-ordination of operations activities within the plants.

For example, the Technical Manager must  
Continued on page 94

# HUMAN RELATIONS RESEARCH:

## ACADEMIC WOOL-GATHERING, OR GUIDE TO INCREASED PRODUCTIVITY?

*Industrial engineering methods improve output, but good human relations can unlock a hidden potential that is even more fruitful, an engineer holds.*

ALFRED G. LARKE  
*Employer Relations Editor*

FOR SOME time now, industrial relations research—most of it academic although carried on in factories and offices—has been indicating that human relations factors—how people get along with their supervisors and their colleagues—have a lot to do with productivity, absenteeism, job turnover and other matters of importance to management.

A good many employers, however, have been reluctant, or in any case slow, to make use of the researchers' findings. They appear to be sitting back, waiting for someone else who "has a payroll to meet" to try out the newer theories and see if they work out well in practise.

For one thing, the idea that human relationships have significant effect on such things as productivity seems to run counter to the premises of incentive pay and other devices of industrial engineering that have been predominant for some time in management's thinking about how to increase efficiency and output.

Employers have seen productivity raised, efficiency increased, costs cut, as a result of incentive wages, fractionization of jobs, and other engineering methods. If methods like these, which tend to disregard the individual feelings of employees, get results; if an exacting boss pushing hard for output gets the work out of his men, does it stand to reason that something that sounds very much like the opposite will get as good results? If improving personal and social relationships in the plant will achieve the same ends, how come we've had good results with our present ways of doing things?

The answer appears to be that industrial engineering and good human relations are not incompatible. Either alone can improve an enterprise's operations; both together can improve them more. And in improved human relations there are long-term factors that appear to be absent from the other methods.

Religion and science were once pretty universally considered antithetical, but probably most scientists and theologians to-day believe they can

get along very well together. The case of engineered work-motives versus motivation based on concern for human relations is similar.

The fact that the two points of view can be embraced by one man is evident in some of the more recent reports of researchers into employee motivation. But probably most persuasive to employers is the kind of evidence offered when a consultant who makes his living by installing engineered pay and work plans comes out with a statement that the "hidden potential" of good human relations promises as much to management as does industrial engineering—or more.

An example is John A. Patton, president of John A. Patton Management Engineers Inc. of Chicago, who insists that both factors are important in attaining industrial goals.

His formula for recognizing the merits of both industrial engineering and the improvement of human relations is simple. It is like the formula of the man who told his wife:

"If we had some ham, we'd have some ham and eggs, if we had some eggs."

"As an engineer," Patton says, "I make my living in industrial engineering from the installation of such management techniques as incentives, time studies, methods studies, plant layout, and similar projects.

"I believe in these techniques because I know what they do to improve the competency of any company. We have the greatest standard of living in the world, and I really believe that one of the reasons is the incentive principle—the incentive principle whether it applies to Molly Jones on the kick press, Sam Smith who sells bicycles, a man who owns a small manufacturing company, or a man who runs General Motors.

"We are all familiar with the fact that a direct incentive will increase productivity by 20 to 50 per cent. But, while that is a very important increase, the ingredient that I find in the excellent companies has a potential that overshadows the productivity increase achievable through industrial engineering techniques. . . .

"The question we have been asking ourselves is—are we managing? We could answer this by saying, 'Quite well,' if we compare our output per man to that of other countries. We are probably as high as we are because of our mastery of techniques and machines.

"When we learn to manage people, however, the increased productivity will be likened to the relationship of the water wheel to nuclear energy."

### Some Research Findings

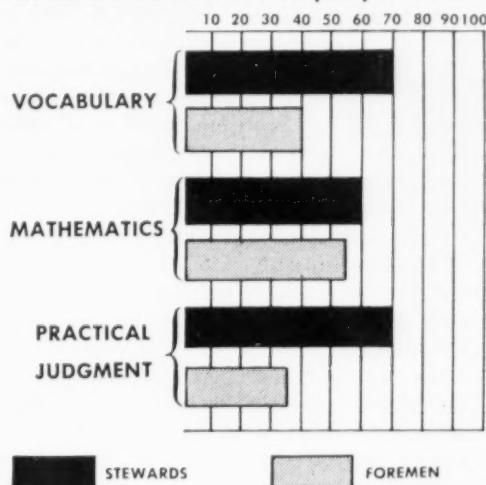
Nor is the virtue of recognizing the strength of other methods limited to the engineering fraternity. The Survey Research Center of the University of Michigan, for example, has consistently found that supervisors who are employee-minded, who are "permissive" in their relations with employees, who share responsibilities with the workers and make it easy for the workers to talk to and with them, tend to have the more highly productive work groups. Similarly, the worried supervisors who stress nothing but getting out the work are apt to have low productivity in their groups. Yet the Center's researchers also found in one case (see *Getting to Know Your People*, Modern Industry, April, 1953) that the very most productive groups had supervisors who considered productivity one of their main goals and were not reluctant to stress it to workers. Similarly, although a group of employee-centered supervisors, exercising a permissive kind of supervision, was able to cut absenteeism in one power plant of Detroit Edison Company (see *Curing the Absence Habit*, DR&MI, 1956), another, stricter, more authoritarian organization in the same company also had a significant improvement in absenteeism records.

The social scientists, in other words, do not let themselves be carried away by preconceived hypotheses.

Rensis Likert, director of the University of Michigan Institute for Social Research, relating

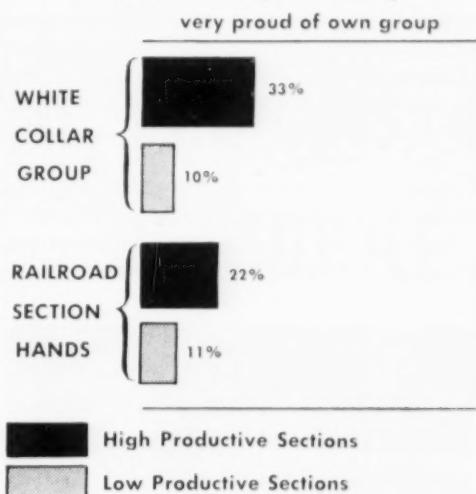
## COMPARISON OF ABILITIES

### Union Stewards and Company Foremen



Union stewards outranked plant foremen in 35 companies studied by John A. Patton Associates. Results on standard vocabulary, mathematics, and judgment tests are shown in chart at left (rankings are percentiles—half of all people who have taken tests rated below 50 percentile, half above). Because unions were strong in these companies and the sample small, results may not be typical of all companies. Center chart, based on University

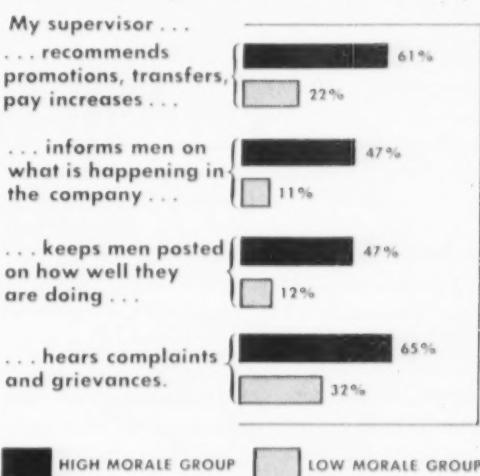
## PRIDE IN WORK GROUP is related to productivity



High Productive Sections  
Low Productive Sections

## SUPERVISORY RELATIONS

### as seen by High and Low Morale Groups



High Morale Group      Low Morale Group

to a recent National Industrial Conference Board meeting an experiment with office workers, told how time-studied workers under close supervision, with little encouragement to involve themselves in the problems of their jobs, were able to increase output 25 per cent. Other groups, under general supervision, encouraged to make decisions at lower levels, also registered an increase in productivity—slightly more than 20 per cent.

### Sense of Responsibility

The benefit of the more employee-centered supervision was demonstrated, however, in aspects other than immediate increase in output. In these groups, there was more willingness to take direction and to take responsibility for seeing that work got done, as well as a more favorable attitude toward supervisors and company.

Although the closely supervised workers actually increased productivity more, they were found to be hostile, resentful, unfavorably disposed toward boss and company. It is out of a background of such sentiments that labor relations difficulties spring in the long run.

Engineer Patton arrives at his conclusions about the value of good human relations by several courses. His estimate of the overwhelming value of the "hidden potential" comes, he says, from observation of facts in the operations of client companies, from studies his staff has made, and from a study reported by Dr. Stanley Seashore of Dr. Likert's institute.

In the first place, he says, increased productivity is a national need, because of United States population trends. Forecasts estimate U.S. population at 200 million in 1975, an increase of 34 million over the present total, so consumer demand will be up. But the proportion of working-

age people will shrink by 1975, because our population is constantly aging. By 1966, the need for goods and services will increase 40 per cent, but the labor force will be up only 14 per cent.

Turning to the "hidden potential" in people as employees, which he says is not tapped by industrial engineering techniques, Patton says:

"Management's continued search for lowered costs through incentives, better methods, and so on, is like the Gold Rush days of 1849 in Virginia City, Nev., when the prospectors became discouraged because of the foreign material mixed in with the gold. It wasn't until someone discovered that the foreign matter was silver that it became profitable for them to mine."

"I have been a consultant for thirteen years, and it has continued to amaze me how little top management realizes that its success or failure is not in its product. The product is only the end result. Success or failure depends on their people—they buy, they make, they sell."

"If I had to name one characteristic that is common to most successful companies, I would say it is consciousness of the fact that the company is people. Perhaps I am more conscious of this because I am in a type of business that has no product. Our product is people."

If the best use is to be made of employees, if they are to be involved in the company as people, certainly the foreman will be an important factor in the process. And, as certainly, there has been enough talk about the foreman in human relations and human relations in the foreman. To hear the management speeches and read the management articles, one might think human relations training for foremen was as thoroughly accepted as the need to eat and drink.

Yet, says Patton, when he asked his engineers,

University of Michigan findings, shows significantly higher percentages of highly productive workers, both in office groups and section gangs, had pride in their groups, than did those with low production records. Chart at right, also based on U. of M. surveys, shows difference in attitudes towards supervisors, company communications, and grievance procedures among machine shop employees with generally high and generally low morale.

at their last annual staff meeting, to tell what problems or obstacles gave them the greatest trouble in their assignments, 25 said it was the inadequate or incapable supervisors with whom they had to deal in client plants.

"While no study is available to indicate percentages," he says, "I would be willing to wager that some 90 per cent of to-day's foremen, who were once on the bench or assembly line, were chosen by management for supervisory jobs because they were the best workers. Their ability to get along with people, the biggest factor in human relations, may be nil, yet they will have to make good on a job that presupposes real, down-to-earth knowledge of this sort."

To point up the foreman situation, he cites some facts he discovered while canvassing 200 foremen and stewards in 35 client companies in the process of selecting the best ones for instruction in the operation of incentive plans and job evaluation programs. Stewards turned out to be more able than foremen (see first chart, above). The sample was small and several of the companies had unusually strong unions, Patton says, so the results may not represent the average plant, but they are provocative.

### Let's Ask Some Questions . . .

"It would be well," he advises management men, "if we asked ourselves two questions:

"1. Why has there been a place for the union steward in our American way of business? Frankly, he has provided what the American foreman or supervisor should provide. It's not so much a sense of security as it is a sense of belonging.

"2. What is one of the outstanding factors that differentiates a good steward from a poor or

mediocre foreman? It is simply that a good steward has the employee's interest at heart and convinces him of it. This rule of human behavior is so simple and fundamental that we overlook it. If our supervision possessed this characteristic, companies could raise their effectiveness or productivity 10 to 20 per cent."

The engineer cites two cases to demonstrate that "you can increase your company's effectiveness, productivity, and morale" by tapping a source known as team spirit, esprit de corps, or, as he calls it, "co-participation."

One example is the well-known experiment in the Western Electric Company's Hawthorne Works in which a chosen group of girls increased production phenomenally as physical conditions of their work were improved—and then kept right on increasing output when conditions were made worse. The explanation, it turned out, was that the girls were proud of being a picked team and demonstrated their pride by doing a good job under all conditions.

#### Sergeants Knew How

"During the war," Patton says, for his second example, "our government spent hundreds of thousands of dollars of our money to try to determine what would or would not make a soldier get out of a trench. At the end of the war they found that what would or would not make the soldier get out was the degree to which his platoon sergeant convinced him that he had the soldier's interest at heart."

Studies by Dr. Seashore and other researchers at Michigan, the Chicago engineer says, "prove that high productivity depends upon group effort, on people working together in an efficient and effective manner. Dr. Seashore also pointed out that in looking for some way to achieve full productive group effort, most organization managers consider economic return as the basic source of motivation. Experience has proved, however, that high pay and incentives do not in themselves produce satisfaction."

"Organizations have also turned to welfare and benefit plans, but again research has not borne out the expected relationship between such benefits and productivity. This does not mean that such plans are without value. On the contrary, they are desirable for many reasons and have a clear relationship to the development of favorable attitudes."

"Dr. Seashore found, however, that research results repeatedly indicate the importance of those motivating factors that lie in the immediate work situation, the job itself, the supervision received, and the human relations existing among the work group on the job, rather than in the direct influence of the broad policies and practices of the larger organizations. Differences in productivity and employee satisfaction, he found, are closely related to differences in supervisory practices."

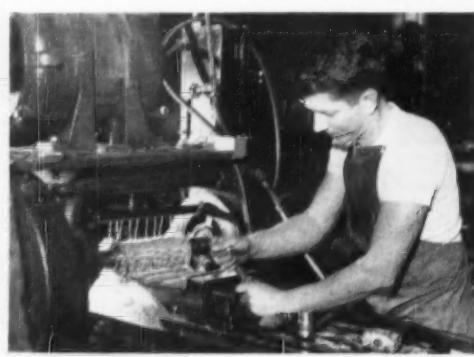
"All the studies at the University of Michigan, without exception, show that differences in employee morale and productivity are closely

related to the way the supervisor does his job."

"The effective supervisor is the one who tends to see his job primarily in terms of human problems—the management and support of people—as contrasted with the supervisor who may see his job primarily in terms of rules, procedures, technical efficiency, pressure for production."

The big question, Patton says, is, "What can a supervisor do to harness the power of group relationships and direct it toward useful ends?"

Research has not given a complete answer, but Patton says a beginning may be made from the



DEVANEY PHOTOGRAPH

*Incentive pay, job simplification, improved methods, other techniques of the industrial engineer, will increase this worker's output, but there's an additional "hidden potential" that can be tapped only by human relations techniques that integrate him in the industrial enterprise, says an engineer who advocates both methods.*

established fact that the supervisor who succeeds in developing an enthusiastic, productive, cohesive team is likely to be sensitive to interpersonal problems among his people; to talk of his job in terms of the group rather than of individuals alone; to see himself as part of the group; to discuss problems with his people; to accept the pooled judgment of his people in forming decisions, and to give assignments to the group as a whole rather than arbitrarily deciding individual assignments.

He cites research by Dr. Seashore, showing the importance of the individual worker's feeling of identification with his work group and his pride and feeling of solidarity with the group. These findings are summarized in the center chart on page 43. One part records attitude of white collar office workers, the other, those of section hands on a railroad.

"It is quite evident," he cites the researcher as saying, "that here the high productive sections tend to have a high level of pride in their work, while the low productive sections have a low level of pride."

A comparison of low and high productivity groups in a machine shop (third chart, page 43) showed a big difference in the percentage who boasted that their group was "better than most" at carrying out its assigned tasks.

Another study, Patton said, showed that supervisors with whom employees say they can discuss their personal problems have more efficient work groups.

"Supervisors who have knowledge about such matters," says Dr. Seashore, "can frequently make adjustments which help the employee to fulfill his job responsibilities. Moreover, if the employee feels free to discuss his personal problems with his supervisor, it is probable that he feels that his boss is interested in him as a person and not simply as a worker. Employees who have this kind of relationship are likely to be motivated to greater effort."

Patton sums up his attitude in these words:

"The problem with all of us as individuals is that we spend most of our time attempting to make ourselves happy, content, and successful. Unfortunately, few of us have learned that achievement of genuine happiness, contentment, and success is through making, not ourselves, but others with whom we are associated, happy, content, and successful."

Finally, he offers this advice to the staff men responsible for research, planning, and administration in the personnel field:

#### Five-Point Program

1. Be sure that top management is not only aware of the hidden potential for productivity, but believes in it and does something about it.

2. Use every possible means to:

A. Train the present staff in this type of thinking. (Present day canned programs are ineffective. It has been proved that modern supervisory programs must not only be tailored to fit the company's conditions, but that they must follow the "incident process" type of instruction, in which actual, on-the-job experiences are used. The program's effectiveness can be multiplied many times if supervisors and foremen have had a part in working it up themselves.)

B. Select and upgrade those who have been or can be trained to acquire this ability. Patton's experience has shown that the by-product of a good training program—the practice in pinpointing problems and solving them—is more valuable than actual content of the program. The method is more important than the content.

3. Make a morale study of employees, to get the fundamental basis for a training program.

4. Get foremen to realize that all of us, as individuals, are selfish, and that the important fact is the matter of degree. People respond in the same way in which they are treated. You cannot get people to do what you want unless your first interest is to help them to satisfy their needs and ambitions.

5. Get the foremen to realize that all individuals are different, and that although each individual must be considered separately, his most effective work will be done if he is made a member of a team. The most successful supervisor talks of the job in terms of the group, not of the individual.

"When we learn to manage people," he concludes, "we will have a release of energy and an increase in productivity that will correspond to the increase in power potential that the atomic age has brought us in the physical field."



# MANAGEMENT, MARGINS, and MONEY IN MIDDLE BUSINESS

RICHARD SANZO

Staff Analyst, Dun & Bradstreet, Inc.



*A definition of middle business calls for plenty of margin and some imagination. The "Colossals"—General Motors, General Electric, Du Pont, Ford, United States Steel, and add a few more—can all be counted on your fingers. The "Giants" number a hundred or less; the "Large," a thousand or more; and the "Middle," an indefinite 100,000 to 125,000 concerns. However, this "Middle" group represents a hard core of American productive and distributive enterprise, well dispersed through the manufacturing centers of the nation. They serve big business and little business, and they compete with them as well. Richard Sanzo discusses some of the management problems of middle business; his study is the fruit of daily contact with management and frequent discussions with officers and executives at conventions. He knows "middle" management, even if it is not possible to place a statistical label on this group.*

the problems of "Big Business." Nor is there any want for those who champion the cause of "Small Business." The middle position seems unnoticed.

The bracketing of all forces in groups as either big or small seems contrary to nature. More practically, it is contrary to common observation. Some concerns which carry the label "small" are larger than some that are called "big." Obviously, there is also a thing that might be called middle business, and some of the troubles and "plight" of small business aren't its troubles at all. It is quite likely that some medium-sized concerns have problems of their own which bear on the economy's health.

Words such as big, medium, and small, being relative terms, do not lend themselves to precise connotations of size. Hence a state of confusion persists as to what a small business is. Observe the differences among certain agencies of the Government in their attempts at defining small business. To the Defense Department a small business, for procurement purposes, is a business with less than 500 employees. To the Small Business Administration, a manufacturer with fewer than 250 employees is considered small, but is regarded as a large business when employing over 1,000 persons. If a manufacturing concern employs between 250 and 1,000 people, it is looked upon as small or large according to size standards set for particular industries. Non-manufacturing concerns, on the other hand, are classified according to annual dollar sales.

The U. S. Department of Commerce uses yet a different set of standards, involving numbers of employees and share of value added to manufacture, in classifying manufacturers. The Department also uses dollar sales for classifying wholesalers and retailers; but the criteria involving amounts of dollar sales vary from those of the Small Business Administration.

Perhaps the following comparison of two going concerns will shed light on some of the differences between a small- and a medium-sized

**D**ON'T tell me the first few years in business are the hardest!"

The speaker, an aging business executive, was obviously a bit miffed. The object of his displeasure was a current study of business failures.

The executive seemed to soften as he shuffled through the figures. "I suppose you can't argue with these figures. It says that half the companies that fail aren't more than five years old."

The business man smiled reminiscently. "All I know is that my earliest years in business were my happiest. In those days, my only worry was the customer—and keeping him was strictly my

personal proposition. Later on," he growled, "I grew to the point where I had to run my business through an organization. That's when I started to have real problems!"

Certainly, he had been through the mill. He headed a textile manufacturing business whose present capital is close to \$1 million, whose annual sales are proportionate, and which employs about a hundred people. His business is one which is neither large nor small. He is, in short, one of the "Mr. In-Betweens"—and there are many middle businesses of his kind.

There is no skimping in the space devoted to

concern. Let us compare two machine and tool shops, one conducted by Lee Jones, of Brooklyn, N. Y., the other by John Smith, of Detroit.

Lee Jones started in 1946 repairing and constructing small machines for jewelry manufacturers. In 1950, he switched over to machine and tool sub-contracting for customers who sell to local producers of aircraft. The net worth is \$15,000, and sales are \$50,000 a year. Lee draws \$9,000 a year in salary, with little profit remaining. What are Lee's problems?

Equity capital? "Don't need more capital," says Lee, "but if I did, I'd borrow on my life insurance, my home, or from my family."

Taxes? "Wish I had to pay more," retorts Lee, who wouldn't mind being in the upper brackets—or believes so.

Domination by big business? "If my customers get orders, I'll get orders, too."

Competition? "Darn tootin'," he remarks, "but in our line, people want quality, and we go all out to deliver it. When there's work to be had, we get our share."

Labor relations? Lee works in his own shop occasionally. If work is slack, he spends less time supervising, more time on the lathe. He seldom hires or fires.

If you ask Lee what he worries about mostly, his invariable reply is, "Orders!"

John Smith is general manager and sole stockholder of a corporation engaged in a similar line in Detroit, started in 1949 with a capital of \$7,500. John, a more energetic man than Lee Jones, managed to get his foot in the door early in the game with several large industrial customers. Sales were large from the start. Gradually, he has been able to branch out from defense work into work on consumer durable lines of merchandise.

Present annual volume is \$2.5 million. Rapid expansion in orders has necessitated no small investment in equipment, the outlay for which has tripled since 1953. In spite of upwards of \$200,000 in earnings in the past two years, the business is pinched for working capital. Smith has installments outstanding for time payment purchases of machinery. His current assets are only 1.5 times his current debts. He has a line of credit at the bank, yet must scramble to pay his bills and meet a payroll of 96 employees.

The shop is efficient—good workmanship is essential. Nevertheless, customers must be placated occasionally because deliveries fall behind schedule. Some believe Smith's principal weakness is a tendency to "bite off more than he can chew." Possibly he could obtain equity capital via some form of debt financing or sale of stock. Smith views the prospect with mixed feelings. "Why lose my independence—and why share

my profit with others?" Obviously, he is sharing both the headaches and the joys of a growing business.

What are the characteristics of a medium-sized business? Despite the difficulties of defining business by size, the following characteristics are frequently associated with the concept of middle-sized business:

It is an independent, stockholder managed enterprise (1) whose officers must devote most of their time in specialized management duties—not minding the store or tending a machine; (2) whose management responsibilities are of a

few clues. The latest Census of Business figures published go back to 1947 for manufacturers, and to 1948 for non-manufacturing industries. The available Census figures give no size classifications of business according to amounts of invested capital. Nor are sales ranges furnished for all functions.

The 1947 Census of Manufacturers shows that there were 23,000 manufacturers that year employing from 50 to 250 workers. The 1948 Census of Non-Manufacturing Industries discloses a total of 79,000 concerns with 20 to 99 employees. If these sundry employment ranges are any indication at all of the number of people which a medium-sized business might employ, there were roughly 102,000 medium-sized concerns in 1948. In any event, the figures are out-dated.

The *Statistics of Income* issued by the Bureau of Internal Revenue offers a partial clue to the possible number of medium-sized businesses. The latest figures are for 1952 and apply to corporations only. In 1952, the Bureau reports, a total of 615,698 business corporations submitted balance sheets with their income tax returns. The Bureau classified these returns according to size of assets per company.

There were 118,000 corporations in 1952 whose balance sheets reflected assets ranging from \$250,000 to \$5 million, plus 6,139 other corporations whose assets ranged from \$5 to \$10 million.

Apparently, then, there are perhaps 100,000 to 125,000 business concerns whose operations are too big to be considered small, too small to be regarded as big. These are concerns which, for want of any better, more precise terminology, merit the distinction of being called middle business.

Generally, they have been lumped by other observers with the mass of small business, and their problems have been grouped with those of small business.

It is my contention that these middle businesses deserve, if not a personality of their own, at least a separate class distinction. More importantly, they seem to have problems which are unique. The nature of these problems is as varied as the nature of the individual businesses. This article is limited only to those problems involving management methods, margins, and money.

Awareness of the importance of management as a distinct skill and necessary ingredient to business stability and growth is, perhaps, the number one problem of middle business. Attaining the required management skill may be ranked as the number two problem. Business growth in a relatively new enterprise is all too often like the emergence from boyhood into

*Continued on page 72*

#### MIDDLE BUSINESS . . .

- . . . Yesterday it held the status of small business
- . . . Tomorrow it may reach the stature of big business
- . . . Today it has the problems of an in-between

#### IT NEEDS . . .

- . . . Well organized, skillful management
- . . . Assistance of management specialists
- . . . More cost-saving shop and office equipment
- . . . Greater access to research
- . . . Sustained earning for expansion
- . . . Sources of equity capital

#### BUT IT CAN BEAT ITS OWN LIMITATIONS BY . . .

- . . . Holding to one-step-at-a-time growth patterns
- . . . Exploiting its strongest assets—Flexibility, Adaptability, Closeness to Customers
- . . . Substituting competitive intensity for its present inferiority complex

multiple nature, seldom shared by less than two nor by more than four or five principals—and with no battery of vice-presidents or other titles to dress up the letterheads; (3) which employs limited specialized talent pertaining to legal matters, taxes, marketing, and the like, on a part-time fee basis; (4) whose operations are generally localized or restricted in the area served rather than nationwide in scope; (5) whose business is highly competitive and whose profit margins are constantly narrowing; (6) whose capital may range from \$300,000 to \$1 million—with reservations to allow for the \$150,000 garment manufacturer and the \$5 million to \$10 million steel mill; (7) and whose annual sales may range all the way from \$750,000 to \$5 million—again with plenty of leeway.

This definition, aside from intolerable length, leaves much room for argument. Perhaps it may succeed, however, by sheer power of suggestion, in establishing an outline—something like the effect of a map drawn by a medieval voyager. Obviously it is not as precise as an actual picture of places seen.

How many medium-sized businesses are there? Unfortunately, the usual statistical sources offer



General Motors President Harlow Curtice talks directly to all GM dealers across the country at one time on closed circuit television.

## TV'S LITTLE BROTHER GROWS UP

*Closed circuit television is extending the most important  
of man's senses—sight—and bringing greater management control.*

THOMAS KENNY  
*Marketing Editor*

CLOSED CIRCUIT television is as old as television itself. But its new uses are as bright as to-morrow's hopes.

During the past several months there has been a significant breakthrough in the use of closed circuit television on virtually all fronts—industry, education, business and politics. For example:

- Industrial TV installations are being put into place at a faster rate than ever before. In fact, if the present pace holds, more new industrial TV systems will be installed this year alone than in all the previous years put together.
- Closed circuit television is being used for business meetings and conventions more frequently than ever before. While it was used on a one-shot basis to solve communications problems a few years ago, now it is frequently a regular part of communications programs.
- Large-screen projection equipment for meetings has been improved considerably so that picture failure which discouraged users a few years ago is no longer a problem.
- The use of color in closed circuit TV is becoming more common.
- The largest closed circuit was held last Winter when the salute to Eisenhower fund-raising dinner was televised on large-screens to an audience of 60,000 in 53 cities.

*Have you thought of these uses  
for closed circuit television? All  
of them have been tested and  
found valuable in industry.*

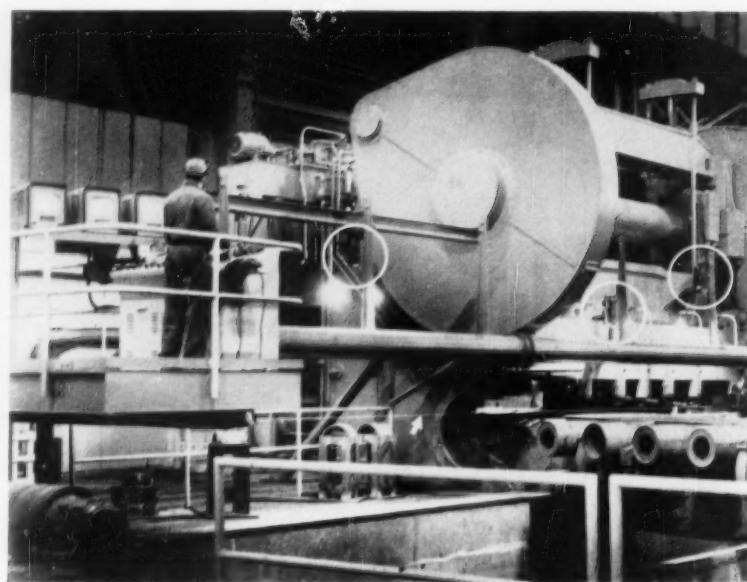
- To collect data on goods to be shipped
- For close microscopic work in research labs.
- To demonstrate inner workings of equipment at trade shows.
- For plant tours in noisy or noisome areas.
- To watch smoke stacks for fuel waste.
- To guard centrally several plant gates.
- For on-the-job training in small assembly work.
- To watch scattered meters from one central location.
- To allow operators to see into dangerous or inaccessible areas.
- To tie together the watching of several routine tasks at one spot.
- To prevent pilfering from warehouses.
- For everyday communication between production and engineering departments.
- For quality control.
- To carry safety messages to employees.
- To observe freight flow through a warehouse.

- The largest closed circuit business telecast was used by the electrical industry to unveil its "Live Better Electrically" promotion plans to an audience of 35,000 in 79 cities.
- Batten, Barton, Durstine, and Osborn, the fourth largest ad agency, used closed circuit to bring its annual meeting to 2,000 employees in ten cities. This is the first such use by an ad agency and may very well lead to many similar uses by clients and other corporations.
- Plans are being completed for a series of sales training clinics, open to salesmen in all companies, to be held in February and March 1957. Sponsored by the Sales Executives Club, the telecasts will reach 30,000 salesmen in 30 cities who are expected to pay \$15 each for three Tuesday evening sessions at which they will see and hear such sales experts as Red Motley.
- Under the aegis of Radio-Electronics-Television Manufacturers Association, producers joined last month in a determined effort to promote closed circuit television for schools.
- General Electric entered the industrial TV equipment market this year.

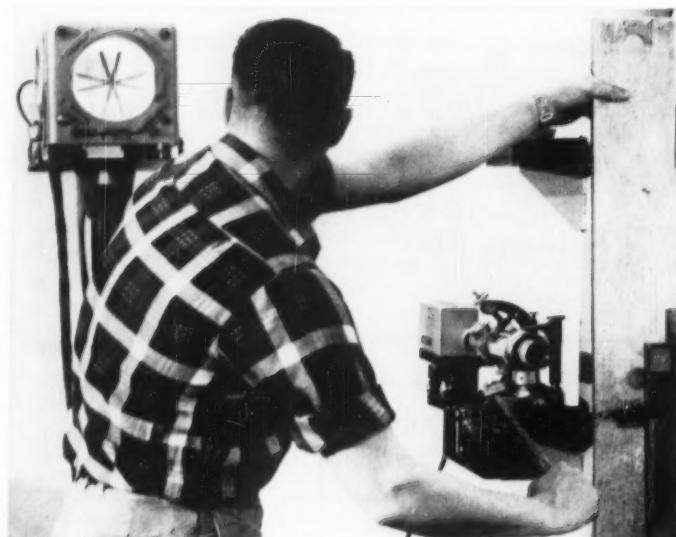
What is closed circuit television? Essentially it is the same system which brings Howdy Doody and other delights into your living room—with a few important exceptions. With closed circuit you keep the picture to yourself and



Faster output of alloy steel is made possible by industrial TV at Lukens Steel plant, Coatesville, Pa., as operator watches furnace line on monitor.



Three TV cameras (circled) enable operator of giant shear at Lukens plant to guide plate to shear mouth and to line it up with guide wire (arrow).



One man does the work of two when optical tooling is done with industrial TV as in Republic Aviation's new system for making jigs used in producing aircraft sub-assemblies. Formerly, one man sighting through a telescope gave instructions to another aligning the contour plate.



To ease the teacher shortage by relieving teachers of non-teaching chores, a TV camera acts as the monitor in this study hall at the New London, Wis., High School. Secretaries in the principal's office take turns glancing into a TV screen to see that all is well. Put in place in March, this is the first installation of its kind in the country.

your program can be as private as a phone call. The basic equipment consists of a camera, controls, and a receiver, but the equipment for industry is much smaller and less expensive than that for broadcasting. For meetings the picture is generally projected on movie-size screens.

The uses of closed circuit television are as wide ranging as the human imagination. It is performing prodigiously in medical education, allowing thousands to peer over a surgeon's shoulder. It's unblinking eye snare shoplifters and watches inmates in prison. It looks for fires in forests, speeders on highways, and even for fish under the sea. New hospitals and some office buildings are being constructed with built-in closed circuit TV.

#### **Business Telecasts**

The idea of telecasting business meetings between cities is not particularly new. As far back as 1946 General Motors used closed circuit TV between two cities. It has long been used by regular television networks to preview new shows and audition talent.

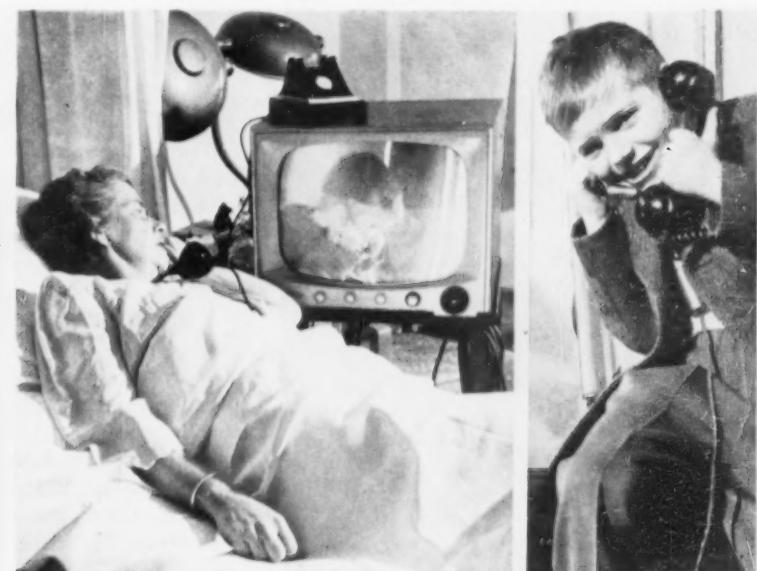
However, not until large screen projection equipment was developed a few years ago did it begin to develop into an important communications tool for business meetings.

Here's a rundown of the communication chores for which closed circuit telecasts have been used in recent months:

- Stockholder meetings.
- Sales promotion meetings.
- Annual report to employees.
- Plant tour.
- Floating new bond issue.
- Safety program for supervisors.
- To demonstrate market research methods to management.
- To introduce new products and plans to dealers and distributors.



Bank tellers in outlying branches can tell from a glance at their TV screens if the signature matches with central records and if the balance is correct.



Neither communicable diseases nor being under age keeps visitors away from patients at the Morristown Memorial Hospital, Morristown, N. J.

During 1954 and 1955 when this medium made considerable headway, business telecasts occurred at the rate of about one or two each month. During the first half of this year, the previous rate has been more than doubled. Telecast meetings are becoming smoother, more professional, and link an ever-increasing number of cities. Individual companies are using the medium repeatedly. For example, General Electric has had six telecast meetings in recent months. New uses are also being discovered. Last month, U. S. Steel gathered 25,000 management men in fourteen cities to promote safety.

What advantages have companies discovered in using closed circuit TV for business meetings? In addition to the obvious saving in travel expense, there is the more important saving in precious executive and salesmen manhours. It costs about \$15 each time a salesman makes a call. General Electric estimates that it can reach dealers and distributors for about \$7 each with closed circuit TV and the sales pitch comes right from the top. Of course, TV is not expected to replace but to complement face-to-face selling.

One particular advantage of closed circuit is that it allows you to demonstrate your heavy equipment in detail to scattered audiences without the extra trouble and expense of transporting the equipment.

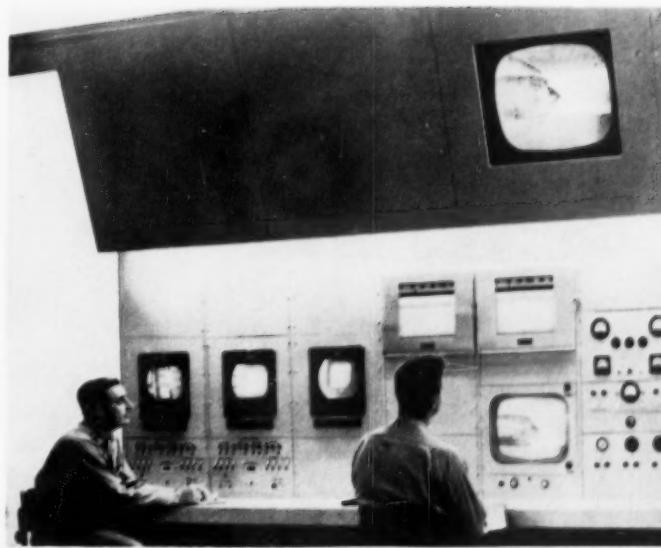
The Sun Oil Company chalked up a saving of 60 per cent in using closed circuit to reach 14,000 dealers in 30 cities with the story of a new product. Executives were spared tiring travel to regional meetings and all dealers got the same story at once. The prior year the new product story took 40 days to tell.

Westinghouse dispensed with the usual national sales convention in introducing its new line and saved \$375,000 in using closed circuit to reach distributors in 27 cities.

Such spectacular savings depend, of course,



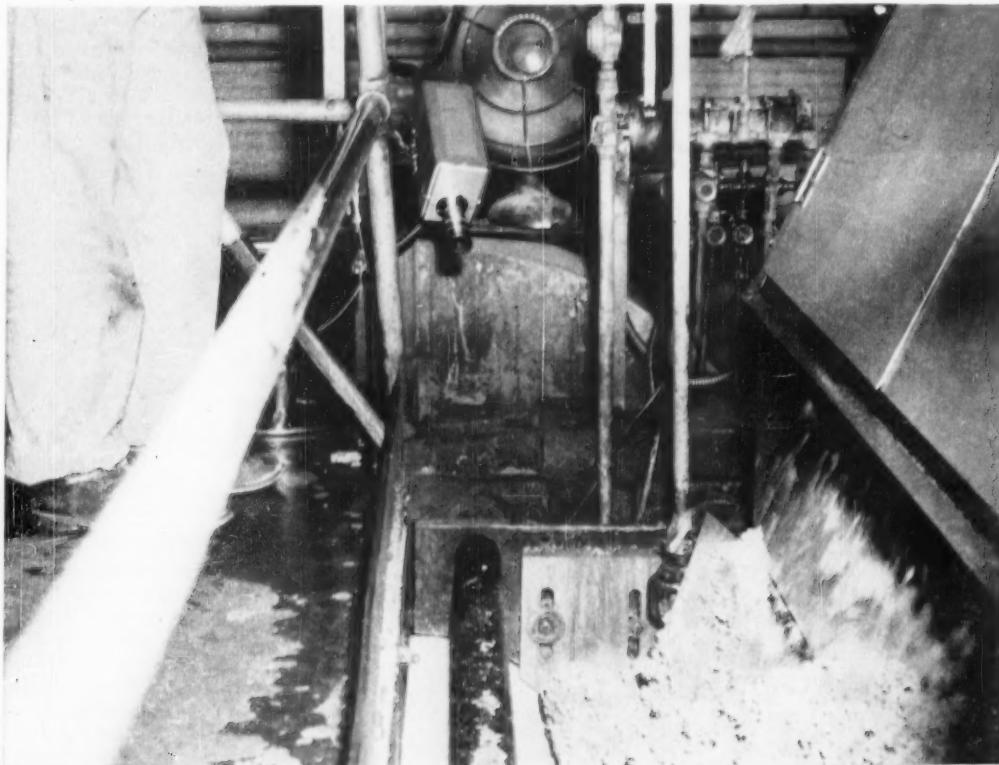
Improvement in quality and production is made possible by microscopic inspection on industrial TV at Cincinnati Machine Shop of American Can Company. Inspector watches image of blade (magnified 288 times) and quickly detects flaws since screen shows tolerance limits.



Gone from the wind tunnel are these technicians who are able to watch and control the performance of aircraft models at Lewis Flight Propulsion Laboratory, Cleveland. The reactions of engines and propulsion systems to varying wind conditions are observed closely 250 feet away.



To bridge a three-story gap in linoleum-making operations, the Armstrong Corp Company, Lancaster, Pa., uses industrial TV. On the third floor, workman shovels linoleum ingredients into a hopper where they are mixed and pigmented before dropping three floors and emerging on the first floor ready for the calendar rolls. Now, with an eye on the operations below, he can vary the amounts of raw materials and so make sure that the mix enters the rolls evenly.



on using closed circuit to the best advantage. Don't use valuable telecast time to show films. Actual tests of learning capacity have shown that viewers are much more receptive to live action. Make sure the entire program is planned and timed to the split second and that it has the vital spark of action. A static scene of the top brass droning on and on in a darkened room is a sure cure for insomnia. Work in a change of pace, such as skits or other interest-sparking features.

It is difficult to generalize about the costs of putting on a multi-city business meeting with closed circuit TV. It depends on the length of the program, the number of locations, program content, and so on. However, as a rough guide, quotations for one hour usually run about \$1,500 a city for a typical number of cities.

Among the companies which produce business telecasts are TNT, Sheraton Closed Circuit Television, RCA, DuMont, American Broadcasting Company, and the other television networks.

### TV in Industry

The market for industrial TV equipment which moved along slowly but steadily for the past seven years, has now begun to roll like a bandwagon. RCA reports sales are running a substantial 50 per cent ahead of a year ago. At the start of 1956 there were about 2,000 installations of industrial TV. Now one company alone, Dage Television Division, Thompson Products, Michigan City, Ind., expects to install 1,500 ITV systems before the year is over. Another equipment producer, Kay Lab of San Diego, notes that its sales are about two and one-half times the rate of a year ago. Diamond Power Spe-

cialty Corporation, Lancaster, Ohio, sees sales topping the 1955 level by a healthy 60 per cent. General Precision Laboratory, Pleasantville, N. Y., expects to triple last year's sales by the end of 1956.

Why the giant steps at this time? The industrial TV buying spree goes hand in hand with the boom in capital spending, the trend to greater mechanization, and the rising cost of labor. The Diamond Power Specialty Corporation notes that the greatest current interest in industrial television is for use in the remote control of machine operations and in materials handling. No small part of the credit goes to the alert marketers and producers of ITV equipment who offer it not as a gadget but rather as a solution to specific plant problems. Smaller, lighter, more rugged and trouble-free cameras and monitors add to their appeal to industry, banks, railroads, and other lines.

Industrial television, which began in the early post-war years with installations in power plants, has spread to virtually every segment of industry. Among the most consistent users, in addition to utilities, are steel mills, and automobile and glass plants. In virtually every instance, industrial TV is used to monitor action although in a few scattered plants, like the Bulova Watch Co. plant in Providence, R. I., television is used to communicate information between departments. At Bulova industrial TV is used between production and engineering to compare blueprints and parts, thus saving many extra trips.

Many potential users of industrial TV look upon it as a stop-gap affair gadget to be used only in rare circumstances—where operations are particularly dangerous or inaccessible. While these are perhaps the most common uses, it is gaining acceptance as an advantageous method for viewing related but widely separated operations from a single economical control spot. Equipment producers estimate that no more than 5 per cent of the possible uses for industrial TV have been tapped so far.

Here are some major uses of industrial TV:

**To observe dangerous processes.** Industrial TV removes workers from areas of intense heat, radioactive and noxious materials. In unusual instances, for example, atomic energy plants, special three-dimensional television provides the observer with spatial relationships for remote manipulations.

At the Beaver Falls, Pa. plant of Babcock and Wilcox a worker to hand signal the operator was needed at the mold into which poured molten steel for continuous casting of steel billets. Now a special air-cooled camera peers steadily at the mold and relays the picture to the operator in the control area.

**To watch inaccessible operations.** At the Alcoa plant in Cleveland, industrial TV is used to make sure that the 35,000 ton forging press is

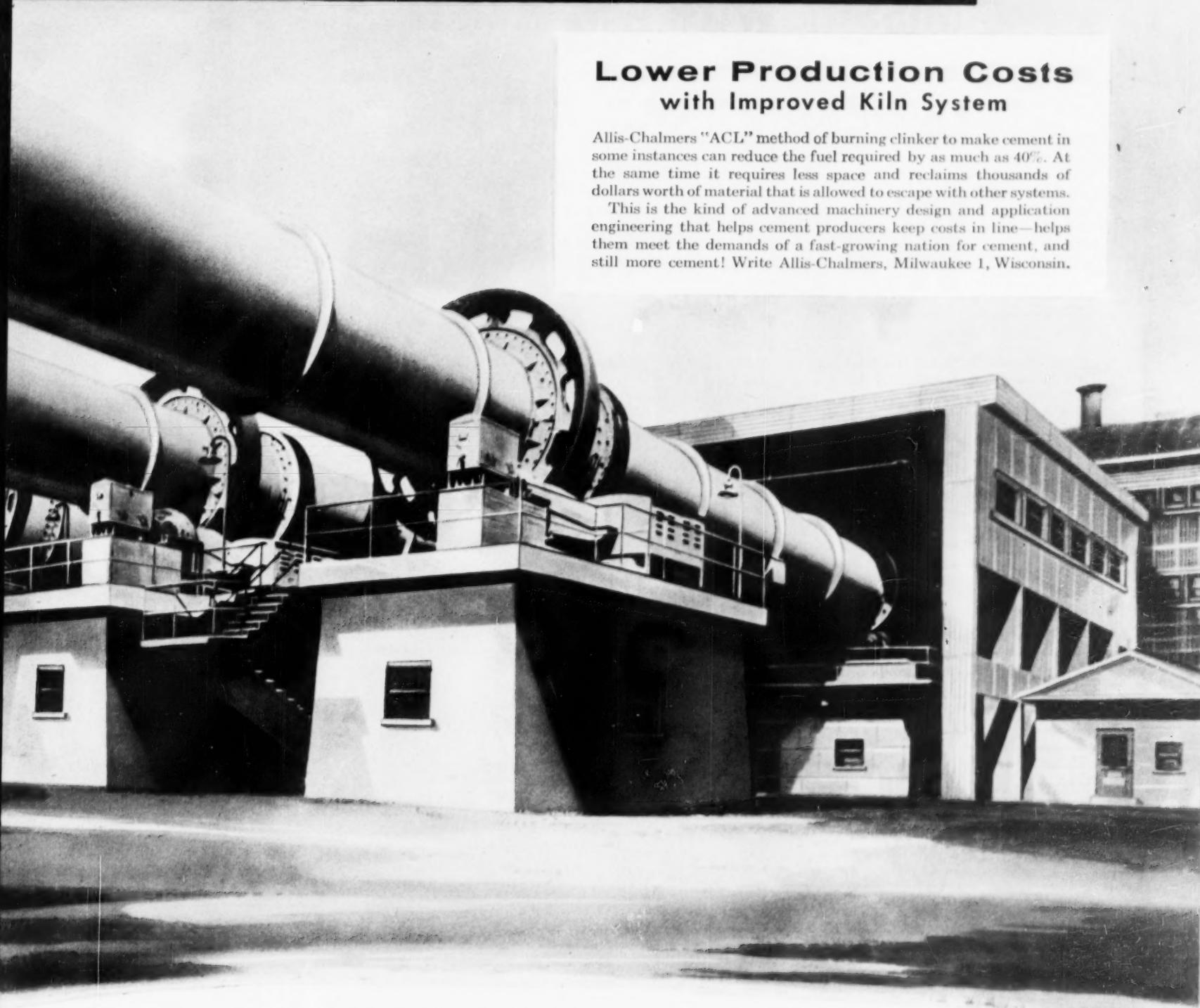
*Continued on 92*

# ... and Still More Cement

## Lower Production Costs with Improved Kiln System

Allis-Chalmers "ACL" method of burning clinker to make cement in some instances can reduce the fuel required by as much as 40%. At the same time it requires less space and reclaims thousands of dollars worth of material that is allowed to escape with other systems.

This is the kind of advanced machinery design and application engineering that helps cement producers keep costs in line—helps them meet the demands of a fast-growing nation for cement, and still more cement! Write Allis-Chalmers, Milwaukee 1, Wisconsin.



## For All Industry

The ACL process is an example of Allis-Chalmers service to the cement industry. In all major industries, Allis-Chalmers is known for its specialized skill in designing, building and applying a broad range of equipment to meet each industry's production needs. Offices in principal cities.

# ALLIS-CHALMERS



**"MISSILE WITH A MAN IN IT"**

**Lockheed/USAF F-104**

# **World's Fastest Jet**

The F-104 *Starfighter*, now in production for the U.S. Air Force, is the most advanced plane of its type ever developed. Its short, knife-sharp wings and dart-like configuration—perfected by extensive wind-tunnel tests—permit the F-104 to flash through the sonic barrier, routinely, without a tremor. Powered by the mighty General Electric J79 jet engine, the *Starfighter*'s exact speed—and its armament—are still a military secret. But the F-104 can overtake and destroy any plane, of any size, known today. And even at supersonic speeds the *Starfighter* has exceptional ease and decisiveness of control because of its many advanced design and engineering features—which for the first time have been combined in one aircraft.

Pilots who have flown the F-104 praise its just-right "feel" and "trainer-like" controllability during takeoffs, landings and in all speed ranges.

Like all Lockheed-built planes, the F-104 *Starfighter* has inherent "design flexibility" that makes it readily adaptable to a variety of military requirements—at lowest cost to our government.

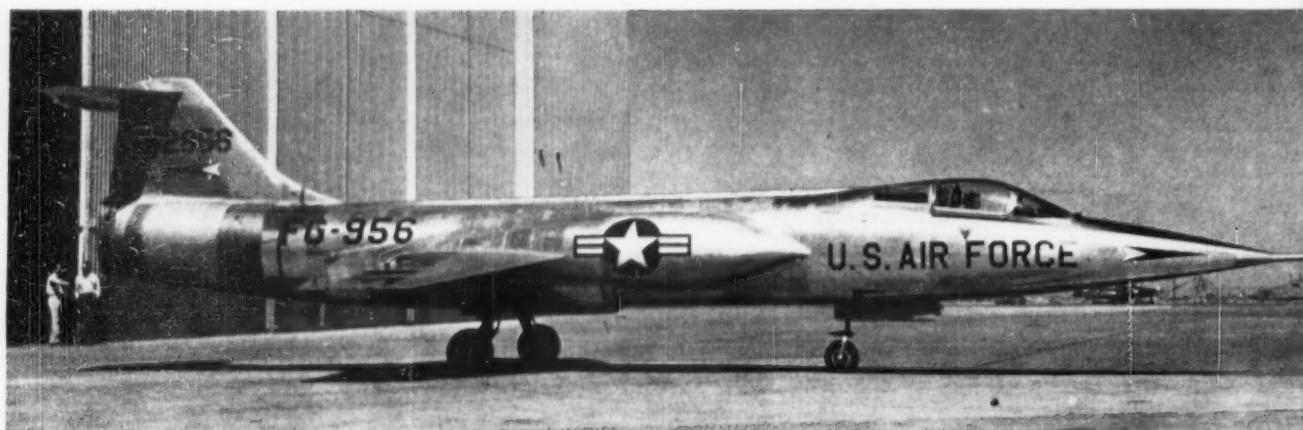
Lockheed's leadership in the design and production of military planes, of nine different types, stems from its policy of close cooperation with the armed services. In the F-104 *Starfighter* the United States Air Force has the world's fastest and deadliest jet—America's "Missile With a Man in It."

# **Lockheed**

AIRCRAFT CORPORATION

*California Division, Burbank, Calif.  
Georgia Division, Marietta, Ga.  
Missile Systems Division, Van Nuys, Palo Alto  
and Sunnyvale, Calif.  
Lockheed Air Terminal, Burbank, Calif.  
Lockheed Aircraft Service, Ontario, Calif.*

LOOK TO LOCKHEED FOR JET LEADERSHIP, TOO





## LOCKHEED'S NEWS COLUMN

Dick Tracy has lost his lead in the electronics race. His wrist radio is surpassed by a new "miniaturized" TV camera. Small enough to fit into a vest pocket, its "eye" is about the size of a cigarette. Built by Lockheed for research ONLY . . . (so far) . . .

**Missile Mail** is promised in the foreseeable future as a civilian development of missile technology. A Lockheed official says that the thousands of scientific and technical people now researching the whole environment of man in connection with missile development will produce civilian benefits beyond the imagination of the layman today. A letter by missile, of course, would get there faster than you could write the letter in the first place . . .

**A Lockheed Man** is working quietly in a sanctuary abroad on a nuclear engine design that will make headlines worldwide when they take the wraps off. Same man's blueprints on a nuclear contraption so startled top military authorities very early in the nation's atomic program that they locked his patent in a government vault where, for security reasons, it still remains . . .

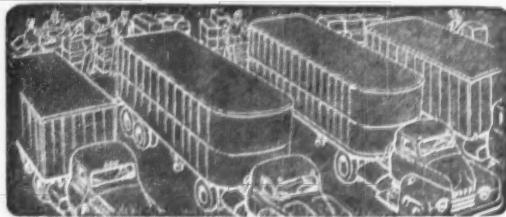
**Lockheed** has been handed a big piece of the much-talked-about ICBM missile that will keep its Missile Systems Division scientists working nights in their new facility near Stanford U—which, incidentally, tripled in size between blueprints and ground breaking . . .

**Beating the heat** which tops 250 degrees Fahrenheit at twice the speed of sound is a matter of concern now to engineers of Lockheed's California Division who are working on methods of making airplane skin glass-smooth. Even modern, high-strength dural surfaces approach their temperature limits at these speeds.

**Early America** makes atomic history this month as Lockheed Georgia Division breaks ground for its new atom-powered plane facility. The 10,000-acre North Georgia site was in the same family ever since the area was opened for settlement in the 1840's.

## MOST IMPORTANT SPOKESMEN

*Continued from page 34*



### No limit on sales, if—

Many up-and-coming companies, with great growth potential but limited capital, have had their growth snagged and profits curtailed for lack of money to finance expanding sales.

This makes it tough on management and stock holders, who want, and are entitled to, more profits—and tough also on salesmen, who want and need more commissions—and could earn them—if sales were not arbitrarily curbed.

There would be no such limit on sales, if a company used our Working Money Plan. It puts sales on a cash basis as far as the user is concerned, but gives customers the regular payment terms. Moreover, it protects the user against credit losses and eliminates much of the clerical cost of doing business—thus cutting overhead and adding to profits.

If you are a manufacturer or wholesaler, with annual sales volume of \$1,000,000 or more, we can show you how to increase your working capital without borrowing or incurring new debt—without diluting earnings or interfering with management.

Do you have any financing problems? We would be glad to have one of our officers confer with you confidentially and perhaps show you a solution. Just drop us a note.



### Textile Banking Co., Inc.

*Providing operational financing for manufacturers and distributors of furniture, apparel, electronics, plastics and textiles.*

55 Madison Avenue, New York 10, N.Y.

separated from the other departments and often far from the neighborhoods they served.

Despite certain measurable efficiencies in centralizing operations on a functional basis, we came to see that there were decided disadvantages to this kind of organization. We were losing touch with the community we were serving, and our own employees' knowledge of the company was becoming increasingly limited to their specific jobs.

This was a departure from the natural way the company had grown, different from the way the business had been run in the past, and different from to-day's operations in smaller self-contained cities and towns. In most localities the operating departments work together closely as a single team serving the community. Here telephone employees can easily see and more readily accept the responsibility for communications in their own community. They know the townspeople they are serving; they are their neighbors. Our employees give us deep roots in these communities.

### Decentralization

About four years ago it was decided that something had to be done to bring our metropolitan operations back on a home town basis, so we introduced the Building Team Plan.

The location of our numerous buildings in Manhattan made possible this return to decentralized organization. Major operating departments are being moved into the same building and set up as a team to serve the same customers within the same area of the city.

Previously, under centralized operations, decisions were made at higher levels, often remote from the neighborhood affected. Now, responsibility and authority to run the business, in line with the particular needs of the locality, have been given to these local inter-departmental teams.

Closer co-operation between all departments is an inevitable result of this decentralized "home town" organization. A common objective—providing up-to-date service for the community, the section of the city where they work—tends to in-

crease understanding all the way down the line.

Employees are getting to know a lot more about how the work of people in other departments ties in with their own. Now they can identify themselves with the problems of the telephone neighborhood and can see the progress their team is making in solving them. The plan has helped to foster the employee interest and understanding that is essential to favorable job attitudes.

Another program that is closely related to our responsibility for informed and articulate employees is the continuous training and development of all levels of management. The way an employee feels about his job and consequently his public relations function is greatly influenced by his relations with his boss.

There's nothing new in industry about human relations courses and training of supervisors in dealing with their people. But it's only recently that we have come to realize the importance of the boss—the importance of his talking and listening—in providing the information that employees both want and need. The personal contact between the supervisor and his work group provides the best means of integrating information into the daily job.

While most of the impressions and beliefs employees form come about in the normal course of the job, there is an essential place for planned and formal informational activities in any program of this kind.

### Two-way Communication

These activities can give added momentum to the over-all job of developing company communication channels and stimulating the every-day flow of information back and forth between management and employees.

The small, two-way discussion meetings of employees and supervisor helps to widen these information channels. Such meetings are among the most effective of formalized activities. A variety of subjects is handled on a company-wide basis: our annual report, benefit and pension plans, need for telephone rates that will provide adequate earnings, and the story of how all our various departments operate.

Discussion guides, visual aids, booklets, and films are furnished to help the supervisor develop the subject. Continuous management training is maintained in discussion and conference techniques.

Many of our management people were born with the ability to get up and talk—and perhaps even more important, listen—to a small group. Others have been able to develop the ability. Some, however, lacking the authority of knowledge, have tried to fall back on the authority of their positions. This can



The AUTHOR

Mr. McHugh began his Bell System career as a clerk for the American Telephone and Telegraph Company in 1919. He was graduated from the University of Wisconsin with a degree in chemical engineering and went directly from college into the Army.

Among other business associations, Mr. McHugh is a director of the First National City Bank of New York, a director and executive committee member of the Air Reduction Company, and a director of the Commerce and Industry Association of New York. In 1954 he was appointed a trustee of the State University of New York.

As a member of the American Management Association, he has previously served as its vice-president and chairman of the executive committee. He is presently a director and member of the executive committee.

Last year Mr. McHugh was named by Mayor Robert Wagner to organize a permanent Citizens Committee to Keep New York City Clean and is serving as chairman and president. He is also president of the Community Service Society of New York.

never do the job. Employees often say privately that their supervisor doesn't know any more about a particular subject than they do. Higher management still has a big job to do here.



M O D E R N I N D U S T R Y

The key to the success of these discussion programs is the employee's self-interest. And this basic element depends in large degree on the imagination and resourcefulness of the individual supervisor who conducts the meeting. Experience has shown that this is not as difficult as it sounds. People want to be "in the know" if they can see the subject in terms of themselves and their jobs.

Then, too, while our people have made it clear to us that they have neither the desire nor the need to know "everything," they have also told us that a certain amount of information is important to them. They say they feel more comfortable and can do a better job when they meet the public if they have a general knowledge of the business.

It's true that an employee's confidence and faith in the business is partly a matter of sentiment and feeling. However, it's better to have the faith mixed well with some sound facts about the wide range of subjects that interests the public.

People are learning that what happens at a directors' meeting in Manhattan, on the drafting boards of Detroit, out on an Iowa farm, or at a union convention in San Francisco, have effects that reach every Main Street of every town in America. If such phrases as "economic democracy" or "people's capitalism" mean anything, customers' rights go beyond the privilege of buying or not buying.

The American consumer who holds the strings that control the future of any enterprise has ruled that business to-day has the responsibility of telling the public just what's going on and why.

We in the telephone business believe that well-trained and articulate employees are the best means of meeting this responsibility.

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From the new *smudge-proof* carbon coating to the new *shock-proof* back, modern Classic Carbon Paper is engineered to meet the more demanding requirements of modern typewriters.

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The *shock-proof* back softens the *jarring* action of high-speed electric typing—the cause of unevenness produced by ordinary carbons. Only the exact amount of carbon necessary to create a sharp, full-bodied image is released. For carbon copies that you'd be proud to send to anyone, specify *Modern Classic*—the carbon paper designed for modern typewriters. Columbia Ribbon and Carbon Manufacturing Co., Glen Cove, N. Y.



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## MODERN CLASSIC CARBON PAPER

by

*Columbia*

COLUMBIA RIBBON & CARBON MANUFACTURING CO., Inc.  
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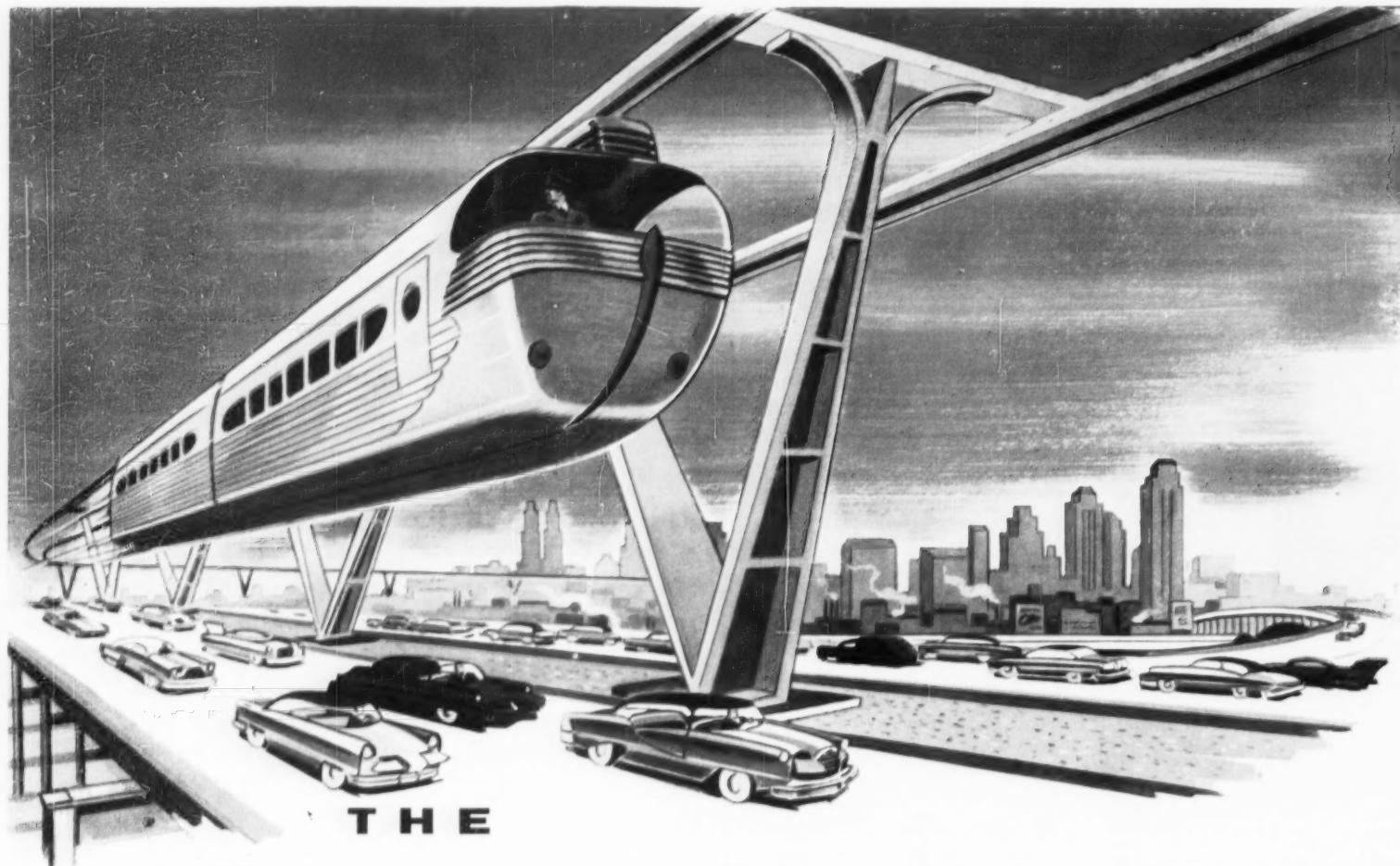
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**S Q U E E Z E   I S   O N**

To keep costs at a minimum, planners of the future seek the most effective use of available space. In industries that are planning for increased production or new product lines, this is especially true. For, space is always at a premium and great economies can be realized when plant floor areas are used exclusively for productive equipment.

Webb conveyor systems remove stocks of materials from floors by carrying them overhead in unused ceiling areas. Thus, you obtain additional floor space for production equipment—secure constant control and reduction in inventories—eliminate bottlenecks and oversupply of materials—get live-storage on conveyors that stops dead stockpiling—increase production by pacing the flow of materials to machines and personnel.

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# Executive BOOKSHELF

GROVER AMEN

## A run-down on new books for business people:

- Understanding and controlling the ups and downs of business
- Thousands of tips on promotion and merchandising essentials
- How to write advertising copy that sells the goods
- The early days of the American labor movement
- How business can build better community relations

## Dynamics of business

BUSINESS CYCLES: THEIR NATURE, CAUSE, AND CONTROL by James Arthur Estey, Prentice-Hall, Inc., 70 Fifth Avenue, New York 11, N. Y., 497 pages, \$8.

Now in its third edition, this book proves the theory that the more you know about a subject the more you find you don't know.

The author doesn't offer any easy solutions to the complexities of business fluctuations and forecasting, but has the ability to explain them in uncomplicated terms. Nor is the book merely descriptive. The author is not afraid to evaluate, criticize, or take a stand.

Throughout the text he stresses a balance between stabilization and innovation. The conflict between security and progress he cites as "the fundamental conflict of the present stage of capitalism." He suggests that easy paths to stability in the interests of security rather than progress pose the greater danger to our economy right now and that private investment, at all costs, must not be discouraged.

The subject of business cycles has also provided Professor Estey an excellent frame of reference for studying and explaining every aspect of the national economy. Each of the three sections is followed by suggestions for additional reading.

This edition includes fresh material on forecasting and "built-in" stabilizers.

## Sales points galore

CHECK LISTS OF SALES-PROMOTION AND MERCHANDISING ESSENTIALS by Printers' Ink Editors, Printers' Ink Books, Pleasantville, N. Y., 271 pages, \$4.95.

Over 2,700 facts, do's, and don'ts in promotion and merchandising essentials are compiled here in clear, readable form. Both the contents pages and text are outlined through large bold-face type to facilitate fast finding of specific material. The text is terse but comprehensive, covering every stage of sales and promotion from the packaging of a product to the planning of a trade show.

## Advertising that sells

EFFECTIVE ADVERTISING COPY by Merrill DeVoe, Macmillan Company, 60 Fifth Avenue, New York 11, N. Y., 717 pages, \$8.75.

Even an ad that catches vividly the reader's attention may not be effective in selling him the product advertised. To show just what principles and techniques of preparing and writing copy best sell products is the aim of this interesting and realistic book. Ideas expressed are not merely theoretical but have been induced from extensive facts and research.

The book stresses that the most effective ad is not a gimmick, eye-catcher, or trick, but a specific, readable, and convincing statement of

how the product will actually benefit customers. In probing every phase of copy writing in detail, the author himself writes convincingly and ever bearing in mind the comment that "the most serious of all operations is separating a man from his money."

## Behind the new unity

LABOR ON THE MARCH by Edward Levinson, University Books, Inc., 404 Fourth Avenue, New York 16, N. Y., 325 pages, \$3.50.

The merger of the AFL and CIO was seen as a fitting occasion to reprint this book, first published 20 years ago. A vividly written account of the growth of the labor movement in America, it is also a drama of the personalities that organized labor, of their wars, defeats and triumphs.

The book has both the advantages and disadvantages of being written not by an historian but by a reporter who himself played an active role in the cause of labor. If Levinson has the fault of being partial to some of the personalities



UNITED PRESS PHOTOGRAPH

he describes, he has also the merit of being able to describe the times with enthusiasm, color, and a wealth of detail.

*Labor on the March* opens with an introduction by Walter P. Reuther and a foreword by James T. Farrell.

## Hitting it off

COMMUNITY RELATIONS FOR BUSINESS by John T. McCarty, Bureau of National Affairs, Inc., 1231 24th Street, N. W., Washington, D. C., 286 pages, \$12.50.

A minimum of theory and a maximum of tips and information drawn from experience are provided in this operations manual. Examples are based for the most part on the General Electric Com-

# FAMOUS FIRSTS

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produced from

## PETERSON ELECTRONIC SEALING DIES

### 1. Hammond

World Globe  
(inflatable)



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Crash-Proof  
Automobile  
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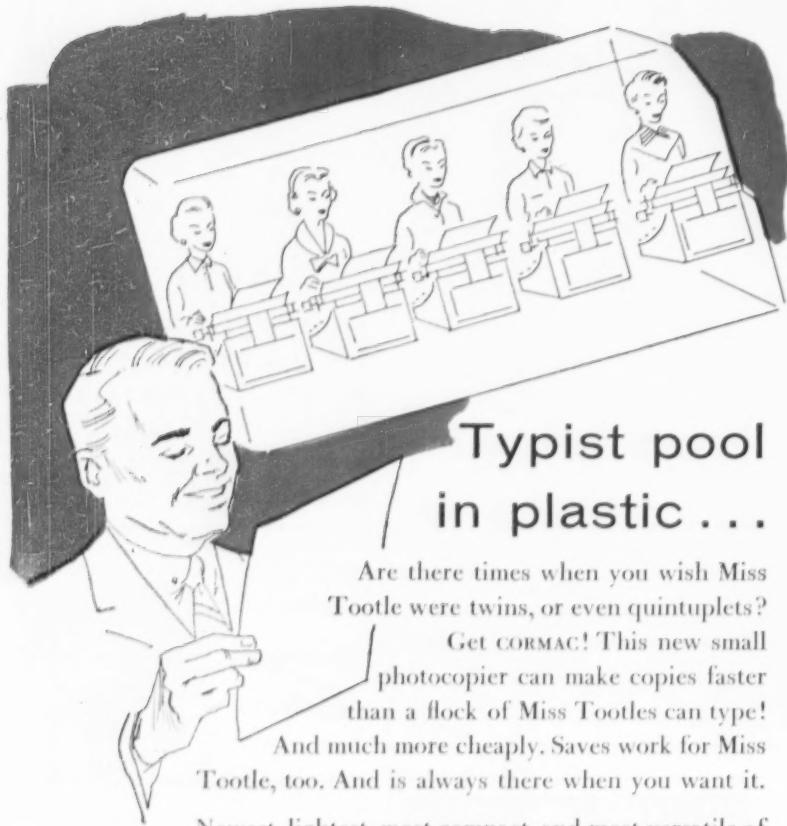


Experienced fabricators of vinyl know that trouble-free operation and superior production demand the best in DIES...DIES engineered and made to Peterson's exacting quality standards.

If you now plan new production let us show you how we can work with your engineers...or take over full responsibility for design and development of the electronic heat sealing DIES you need.

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## Typist pool in plastic...

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Can be used by anybody. And so light it can be moved easily from place to place.

CORMAC copies of letters, contracts, statements, plans, orders, tax forms—save time, speed work, cut costs. Has innumerable uses. Even a small office can afford one. CORMAC is one of the best looking office appliances you ever saw—housed in beautiful, durable, soil-proof French grey plastic with white trim. Made in the USA, and backed by a lifetime guaranty!

Ask the nearest dealer to show you. Or write for booklet and prices to CORMAC Industries, Dept. 21, 80 Fifth Avenue, New York City... You'll be glad!

# CORMAC



pany where the author is a consultant.

The material covers a complete range of community relations problems from making a speech to opening a new plant. Examples are not limited to boasts of success but include failures and explanations of just how they could have been avoided. Chapters on advertising and press relations are particularly realistic and to the point.

The manual contains summary check-lists, bibliography, and is bound in a loose leaf format to allow additional filing of material.

### Automation: learning your needs

**PROCEEDINGS: AUTOMATIC DATA PROCESSING CONFERENCE** edited by Robert N. Anthony, Division of Research, Harvard Business School, Soldiers Field, Boston 63, Mass., 194 pages, \$3.50.

Just how does a company decide it will benefit by automation? What are the costs of this preliminary investigation alone? What are the criteria for selection of equipment?

These are some of the questions explored in this paper-bound collection of conference talks designed to bridge the communications gap between technicians and business men. The book includes clear, readable descriptions of the principles on which automatic machines operate, case studies, and concluding talks on automation and operations research.

### Fact and fable

**THE THREE DIMENSIONAL MAN** by A. M. Sullivan, P. J. Kennedy & Sons, 12 Barclay Street, New York 8, N. Y., 297 pages, \$4.

That modern science, specialization, and business pose a threat to "culture" is a familiar by-word of the day. This book is an attempt to get behind such generalities and to explore concretely the cultural resources available to the modern business man or specialist.

In its plea for the man of three dimensions, natural, aesthetic, and spiritual, the book ranges in subject matter from history and economics to poetry and philosophy. But the approach is never academic. The book points always to the present and the practical and is addressed to men who must find their share of culture in the hours and off-hours of the work-a-day world.

The author suggests, critically

and optimistically, that whatever America's cultural failings are, they cannot be blamed on science or machines, that culture is originally not a social but an individual quality—and responsibility.

### New fields for supermarkets

**SELLING THE SUPERMARKETS** by Julian H. Handler, Farnchild Publications, Inc., 7 East 12th Street, New York 3, N. Y., 159 pages, \$5.

The author specifically stresses the role of the supermarket in merchandising non-food products. Methods of supermarketing are described in detail, as well as factors to be weighed in deciding what items are most adaptable to the



DEYANEY PHOTOGRAPH

field. The book includes illustrations and a brief history of the supermarket since its birth as a "depression baby." It concludes with a listing of major supermarket chains, service merchandisers, and non-food grocery wholesalers.

### Getting organized

**NON PROFIT CORPORATIONS AND ASSOCIATIONS** by Howard L. Oleck, Prentice-Hall, Inc., 70 Fifth Avenue, New York 11, N. Y., 460 pages, \$10.

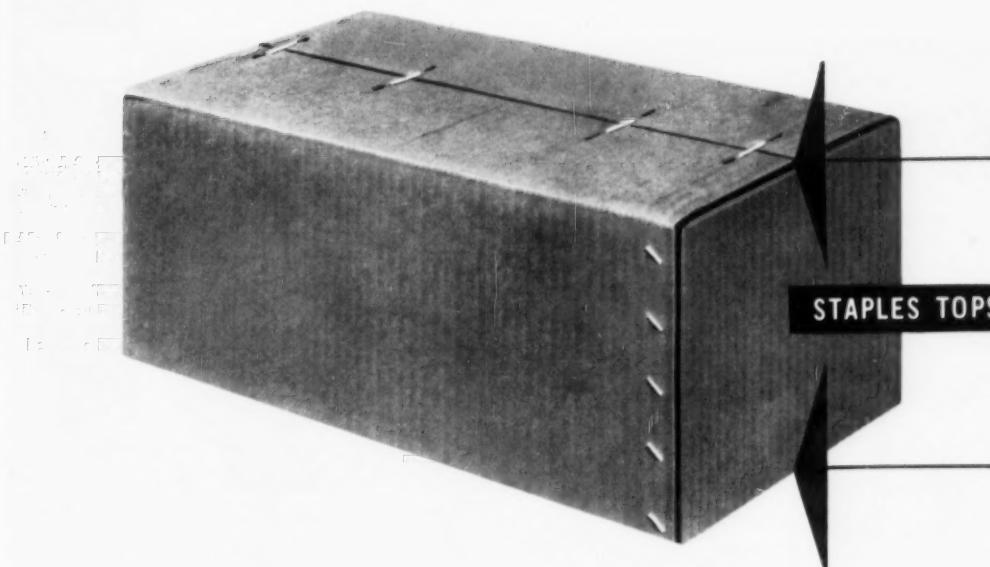
A practical guide manual on how to organize, operate, or dissolve non-profit enterprises ranging from stamp clubs to chambers of commerce. The author explains related problems of tax and law in clear and plain terms.

### How management works

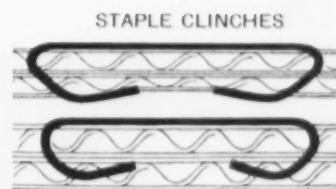
**PRINCIPLES OF MANAGEMENT** by George R. Terry, Richard D. Irwin, Inc., Homewood, Ill., 730 pages, \$7.80.

Though primarily a text book, this revised edition is a particularly thorough and imaginative one. It includes a fourteen-page bibliography.

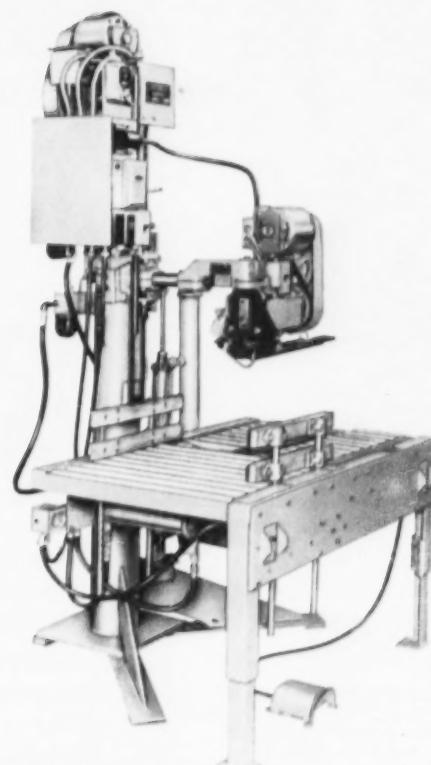
# New BOSTITCH BOXLOK seals your containers faster, more securely



STAPLES TOPS AND BOTTOMS IN ONE PASS



- Tightly seals top and bottom flaps of regular slotted and overlapped containers . . . with wide-crown staples of .090 x .040 wire . . . requiring fewer staples per box . . . driven and clinched from the outside.
- Tops and bottoms stapled simultaneously—or tops only, if desired—at rate of over 100 stapling strokes per minute. Swivel heads permit quick change from diagonal stapling on overlapped flaps to right-angle stapling across flaps that meet. Separate  $\frac{1}{2}$ -h.p. motor for each head.
- Cartons automatically centered to line up staples. Adjustable split centering device releases carton to permit free movement after each staple is driven.
- Staples automatically driven as head lowers and contacts box.
- Cartons of varying widths, heights and lengths can be stapled without adjustment.
- Wearing parts accessible for quick replacement. Little service needed.
- Meets requirement of parcel post, freight, overseas shipments.



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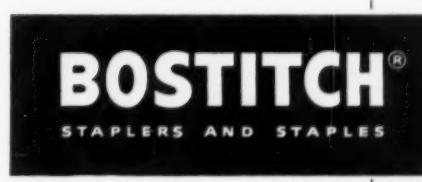
Name \_\_\_\_\_

Business \_\_\_\_\_

Address \_\_\_\_\_

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Fasten it better and faster with





*"But the figures prove it's a genuine antique!"*

This machine is only *six years old*. But compared with others now in general use, it's already obsolete.

Luckily, management at this plant discovered the machine's true age. *Before* the situation could become desperate. How? With Keysort punched-card accounting.

*On time* reports proved that costs on the machine were running at an abnormally high level. And high cost meant high selling price . . . so high that competition was threatening to pull ahead. But as a result

of information supplied by Keysort, a newer, improved machine was purchased. And competition's prices were met — with ample margin for profit.

McBee Keysort can give you *fast, accurate* reports on every phase of factory operation. Whatever your size or set-up. At remarkably low cost.

The trained McBee man near you has a presentation which will show you how it's done. *It will take him just one hour from start to finish.* Phone him, or write us.

# McBEE KEYSORT®

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Manufactured exclusively by The McBee Company, Athens, Ohio • Division of Royal McBee Corporation  
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**NEW METHODS  
& MATERIALS**

... ANNESTA R. GARDNER

## *Fresh angles on design and production, protection and packaging*

### **Protected by plastics**

Storage tanks, plant piping, and truck wheels gain added life expectancy from new vinyl and epoxy resin formulations:

From Metal & Thermit Corporation comes a sprayable vinyl plastic-sol (below, right) which, the company says, can be applied in thicknesses as great as 50 to 60 mils in a single layer. M&T engineers suggest it for storage tanks, ducts, and other heavy-duty equipment.

To protect truck rims from abrasion as well as from corrosion by water and road salts, Firestone Steel Products has developed a "perma-plating process," using an epoxy resin dip coating. Firestone says the epoxy dip provides better protection than the electroplated coatings previously used (see photograph below), and is easier to apply.

Putting epoxy resins to work in another way, Bakelite Company describes a taping system that pro-

vides structural reinforcement, corrosion resistance, and insulation for cast iron piping (see photograph below). The piping is coated with epoxy resin, then wound with glass fiber tape, and another coat of resin applied. Oven-curing then produces a hard, tough, durable armor.

### **These fibers solve bearing problems**

From the auto industry comes a new idea in bearing design that promises new advantages for food, drug, textile, paper, and chemical processors. It may have applications in steelmaking and other industries as well.

The new bearing puts textile-type fibers to work in a new way, and promises to open new design paths in couplings, gaskets, and quite a few other parts.

The original problem was to design a ball joint for an automobile front wheel suspension unit.

A metal ball in a metal seat would do the job, but meeting the required tolerances was not easy, and constant lubrication was necessary.

So, engineers at American Metal

Products designed a phenolic plastic seat insert, into which the metal ball was pressed while the plastic was still only partially cured. That way, the ball formed its own seating surface. But, the trouble was that the phenolic plastic had a relatively high coefficient of friction and the joint was a bit stiff.

The next step was to give the phenolic a surface covering of some material which had a low coefficient of friction. *Teflon* was chosen because this fluorine plastic (made by DuPont) needs little or no lubrication and is unusually resistant to chemicals and heat.

Unfortunately, though, the plastic tends to flow under pressure.

That's where *Teflon* fiber proved to be the answer to the engineer's prayer. By using *Teflon* in the form of a woven fabric, pressed into the surface of the phenolic insert, it was possible to take advantage of many of the plastic's advantages without suffering from its limitations. The fiber is stronger than the plastic, and the fabric construction minimizes cold flow.

Now, AMP is studying application of the bearing design to other

## **BUTLER** **low priced?** **... YES**



Butler metal buildings combine well with brick, glass or wood, to give you any kind of a prestige appearance at low cost.

### **but ... no other building offers the same advantages**

It is so much easier in every way—including financial—to build with Butler steel buildings. Easy to buy—just order the space you need. Easy to erect—half-finished before they reach your site, Butler buildings bolt together fast. Easy to expand or change—bolt on new additions. Easy to modify—blend well with "showcase" fronts—finish and insulate to your requirements. Easy to maintain—Butler steel or aluminum cover panels need little or no care. Make no mistake—Butler steel buildings equal or exceed in every way conventional buildings that cost much more. Get all the facts...mail coupon today.



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Please mail more information on  
Butler steel buildings.

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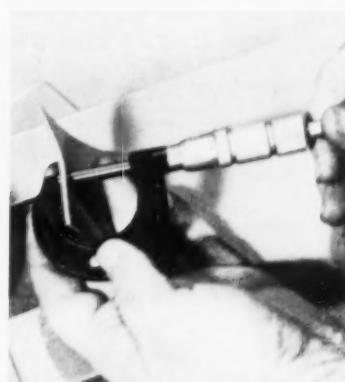
State \_\_\_\_\_



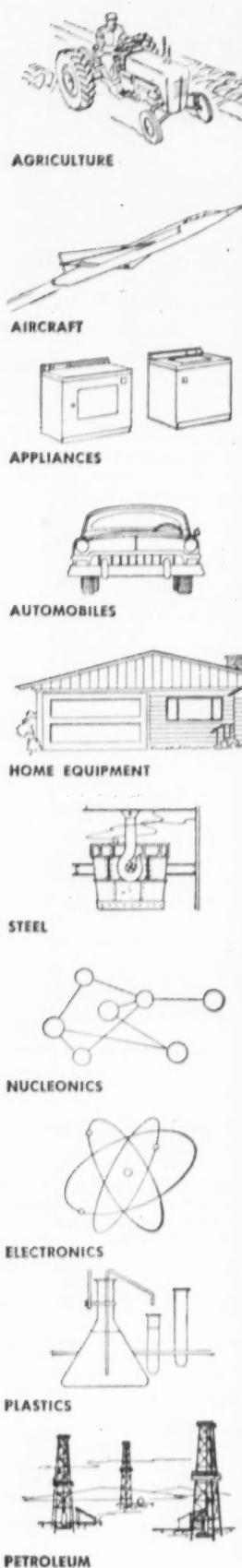
Epoxy dip stands salt spray.



Glass-plastic armor protects pipes.



Sprayed vinyl forms thick film.



## PLANNED DIVERSIFICATION

*... the basis for Borg-Warner's dynamic progress and future growth*

"Business" with Borg-Warner is many businesses. And business is good. During 1955 sales reached an all-time high in excess of a half-billion dollars, the result of Borg-Warner's dynamic program of "planned diversification."

Organized originally to serve the automotive industry, Borg-Warner has also been identified for many years with the agricultural, aircraft, appliance, home equipment and steel industries.

Today Borg-Warner is becoming increasingly active in such newer fields as electronics, nucleonics, plastics and petroleum. During 1956, for example, B-W will spend approximately \$25 million for additional facilities with a new \$10 million plastics plant, an extensive new electronics plant and laboratory, and a new multi-million dollar industrial research center.

All such activities are carefully planned. Expansion in these and other fields is undertaken only when thorough study clearly indicates that such enterprises will benefit from B-W's special skills and broad experience in research, engineering, production and management.

Back of all this planned diversification for growth is Borg-Warner's guiding principle "design it better—make it better." If your interest lies in any of these fields, your inquiry may be especially rewarding. *Borg-Warner Corp., 310 S. Michigan, Chicago 4.*

*Benefiting almost every American every day*

# BORG-WARNER



working parts (seals, bushings, pistons, leaf springs, slider beds) and is licensing other companies to use it. Minnesota Rubber, for instance, has developed aircraft applications—in flexible bushings and the like. Micromatic Hone is applying *Teflon* fabric phenolic bearing surfaces to connecting rod ends. The basic idea looks like a good bet for almost any working surface where motion is intermittent and lubrication poses problems.

Information on *Teflon* fiber may be obtained from Du Pont's Textile Fibers Department.

### Job-studied coatings for cost-saving application

Well aware that the cost of applying and maintaining a protective coating is often far greater than the cost of the coating itself, Shutt Process Equipment Corporation is providing a new and unusual service in its All-Coat Engineered Coating Systems:

With each primer and top coat specification, it not only supplies detailed data on application procedures and cost, but also an estimate of maintenance cost per square foot per year (including a graph of coating thickness versus probability of early failure). Furthermore, it registers each coating job, and sends maintenance reminders to specified personnel.

Sounds like an idea other suppliers could adopt and users would welcome.

### In Brief

**New packaging system**, based on use of a Swedish-designed filling machine that is unusually compact, versatile, and easy to adjust, produces air-tight, moisture-proof packages for products ranging from bearings to bouillon. Gardner Board and Carton Company, Middletown, Ohio, is licensed to sell the new *Hermix X* packaging machine and makes the prefabricated carton-and-liner combination that is used with it. Cartons up to  $6\frac{1}{16}$  inches in length can be handled on the standard machine, and carton liners may be foil, plastic, or glassine.

(For other packaging news see pages 65 and 67.)

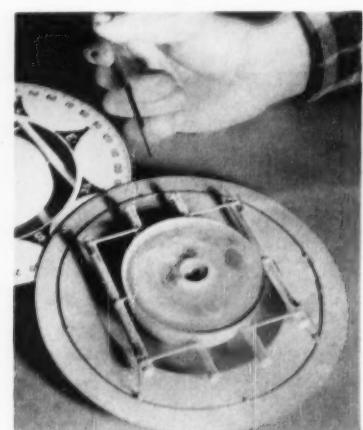
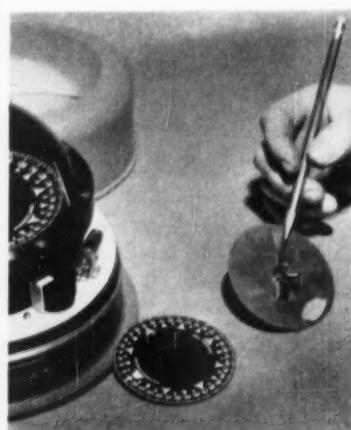
**New sources** for titanium and zirconium are opening up fast:

NRC Metals Corporation (National Research Corporation subsidiary) will soon be making hafnium-free zirconium for the Atomic Energy Commission and hopes to make ductile zirconium metal available to industry "at half the current market price and in quantity."

National Distillers Products Corp. has also signed an AEC contract to produce zirconium, and expects to erect a commercial titanium plant in the near future.

Already in production is Electro Metallurgical Company's big titanium "sponge" plant at Ashtabula, Ohio. It's equipped to turn out 7,500 tons a year.

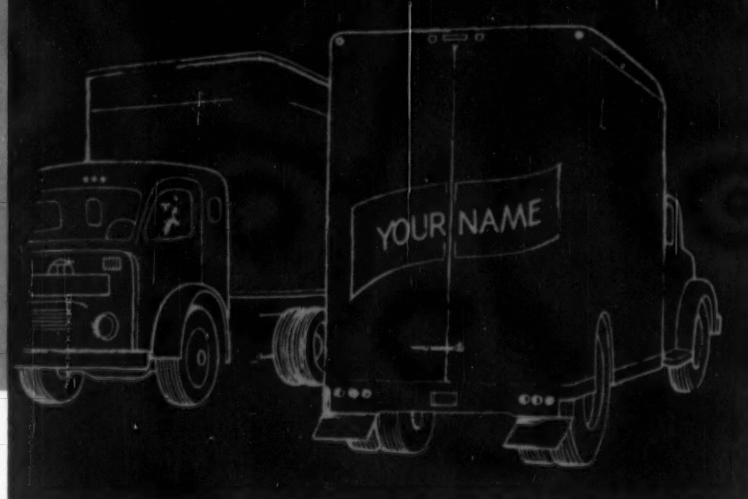
To process the raw metal



### Stronger magnet: better compass

By taking advantage of new permanent magnet materials, E. S. Ritchie & Sons and Marine Compass have been able to effect big improvements in their products, Carboly Department of General Electric reports. The photographs here compare the new design (above), using

two tiny Carboly Alnico bar magnets to the old tube-type unit with its magnetized steel wires and large buoyancy chamber. Recent advances in magnet technology offer many companies a chance to achieve higher product quality and lower manufacturing cost.



to the man who wants to get out of  
"trucking" AND BACK TO HIS OWN BUSINESS!

## TRUCKLEASING IS VERY IMPORTANT TO YOUR FIRM ...

Truckleasing allows you to have the exact kind, color, size and number of trucks you need at any given time of the year without the "headaches" of running a trucking business.

True NTLS, ALL-SERVICE Truckleasing gives you attractive, perfectly maintained trucks (or a single truck) with everything furnished but the driver! You are provided licensing, insurance, maintenance—as well as a flexible fleet for peak or slow seasons through special rental privileges.

True NTLS Truckleasing—gives you controlled cost TO THE PENNY—known in advance. A single invoice for ALL trucking expense.

You owe it to yourself—to your firm—to your stockholders, to learn more . . . the card tears out easily—requires no postage or addressing—entails no obligation!



23 EAST JACKSON BLVD., CHICAGO, ILL.

### LEARN HOW TO USE YOUR "FROZEN TRUCK CAPITAL" TO BETTER ADVANTAGE

Ask for "The Little Loan that Wasn't There." This brochure gives you a graphic illustration of how you unleash capital when you lease your trucks. See how a firm's financial statement is improved by NTLS Truckleasing.

### FIND OUT HOW YOU ELIMINATE THE EXPENDITURE OF COSTLY EXECUTIVE TIME ON CLERICAL AND GARAGE MECHANIC'S WORRIES

Ask for "Truckleasing—The Modern Way to 'Own' Your Trucks" and and how it applies to your operation.

### DISCOVER WHAT TRUCKLEASING REALLY IS

Request the folder "Leasing Lexicon" authoritative definitions of Truckleasing terms. This pamphlet is industry's guide to accurate truckleasing terminology.



LET *National*  
**TRUCK LEASING  
SYSTEM**

**SEND  
THIS  
CARD  
TODAY!**

*National*

TRUCK LEASING SYSTEM, INC.

23 East Jackson Blvd.  
Chicago 4, Illinois

GENTLEMEN:

Please send me WITHOUT OBLIGATION, your free brochures on:

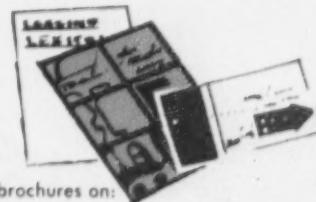
THE MODERN WAY . . .  THE LITTLE LOAN . . .  LEASING LEXICON

MY NAME \_\_\_\_\_ POSITION \_\_\_\_\_

FIRM NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



## ■ What IS Truckleasing?

Truckleasing is the cure for a 90-billion-dollar annual headache of management and traffic managers. It is a controlled expense in the hands of specialists. But only when it is true ALL-SERVICE Truckleasing such as furnished by NTLS members—find out about this valuable tool available to you.

## ■ How does just a SINGLE Invoice Cover All Trucking Costs?

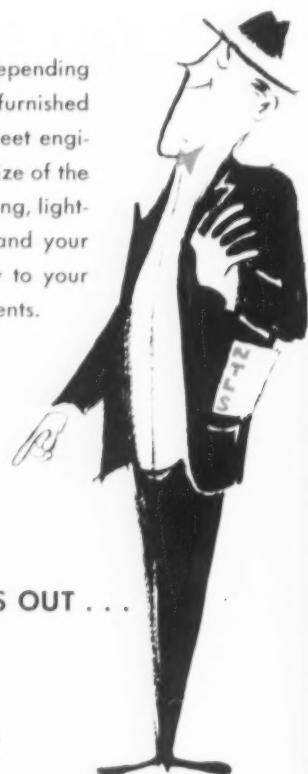
Too, out-of-pocket cost is not the only factor in trucking. Bookkeeping, clerical work, executive time and worry, legal and maintenance time—all of these boil down to ONE invoice every week or month—the amount known in advance. Learn how the "single invoice" can help your firm—can fit your operation!

## ■ How you can save Tax, Time and Worry.

Discover how a qualified Truckleasing service provides you with authoritative information you need on all state laws, regulations and the answer to your tax problems. Your area—or coast-to-coast, border-to-border—Canada, too, of course!

### Tailor-Made TRUCKS

Truckleasing can be as different as night and day depending upon your lessor. True ALL-SERVICE Truckleasing, as furnished by your local NTLS member, gives you a truck or a fleet engineered to your operation. The sizes of the trucks, the size of the fleet, the color, insignia and all details of proper licensing, lighting, weights, insurance are worries lifted from you and your staff—handled by qualified experts, tailored exactly to your needs and kept flexible for your changing requirements.



THIS CARD TEARS OUT . . .  
IT REQUIRES NO  
POSTAGE . . .  
SEND IT TODAY!

**FREE BOOKLETS CAN CHANGE  
YOUR PROFIT PICTURE...  
Stop worry, in a hurry!  
Send the card  
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**BUSINESS REPLY CARD**  
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Postage Will Be Paid By —

NATIONAL TRUCK LEASING SYSTEM

23 East Jackson Boulevard

CHICAGO 4, ILLINOIS



Free information from this authoritative source will be sent to you immediately—without obligation. Don't delay—send today. If you have a specific problem write to:

**National**  
Truck Leasing System, Inc.

23 East Jackson Blvd., Chicago 4, Illinois

"sponge" turned out by plants like these, there are new fabricators opening up, too. One, for instance, is Johnston and Funk Titanium Corp., now producing titanium welding wire and planning other semi-finished forms for early release.

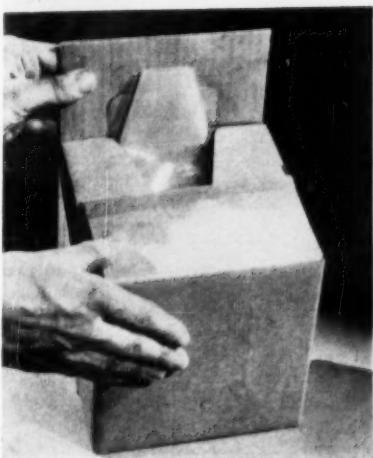
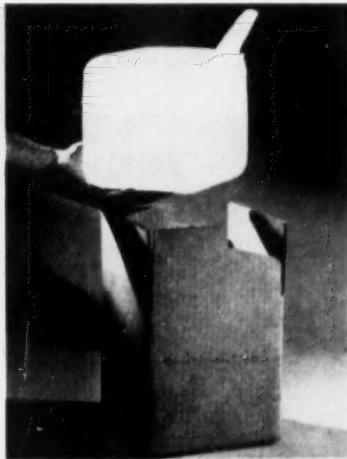
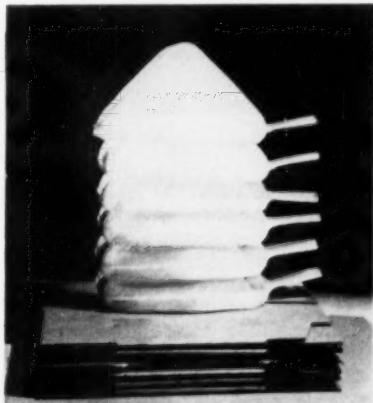
**New aerosol spray products**—drugs, chemicals, foods, cosmetics and a variety of industrial supplies—are promised by new propellants and packaging techniques developed by Connecticut Chemical Research Corp. Using combinations of rare gases like krypton, helium, argon and neon with nitrous oxide and carbon dioxide, as propellents in place of the fluorocarbons most commonly employed as propellents, Conn-Chem claims it is now able to package many products—liquids, creams, and powders—which have

not previously been produced in aerosol form, including martinis (the vermouth, that is) and mouthwashes ("for that morning-after taste").

Conn-Chem, a contract packaging concern, does not plan to produce these products itself, but offers its know-how and production facilities to companies interested in marketing aerosol products.

**Foamed polystyrene** for insulation, flotation, and molding of package liners, displays, and toys, is also obtainable from a new source: United Cork Companies' Uni-Crest Division. UCC has licensed a German process for making expandable polystyrene, and is setting up plants in the East, Midwest and Far West to produce expandable material (in bead form) and molded products.

*More news on page 66*



**Cubistic—but practical**

It looks unusual, but this new bulk container is designed to provide low-cost, contamination-proof shipment for a wide variety of foods and chemicals. Made by Hedwin Corp., it consists of a cubical Bakelite polyethylene liner and a protective cardboard carton. As the

pictures show, liner and carton stack neatly for storage (upper left), can be set up with standard equipment and filled by gravity or pressure. On arrival, the container is opened as shown at lower left, and it serves as a convenient dispenser (lower right).

## SAVE TIME and MONEY on price lists... parts lists... directories . . . catalogs . . . indexes . . . etc. . . .

**ACME VISIBLE**

### photo panels the quick, easy way to reproduce lists...



**JUST TYPE**



**PHOTOGRAPH**



**REPRODUCE**

Save time and expense of typesetting; your typewriter is your compositor. Each line typed on individual card. Revisions quickly made, listings added or deleted, page arrangements changed and illustrations or headings added.

Always available for instant reference or use, easily kept up to date in your office and under your control, conveniently and compactly filed.

Reproductions can be made any proportionate size and printed by offset, planograph or other methods of commercial or office reproduction.

DISTRICT OFFICES AND REPRESENTATIVES IN PRINCIPAL CITIES

*Ask the man from Acme to show you examples*

**ACME VISIBLE RECORDS, INC., Crozet, Virginia**

Send us more information and literature on Photo Panels.

8756

We are interested in Acme Visible equipment for \_\_\_\_\_ records.

KIND OF RECORD

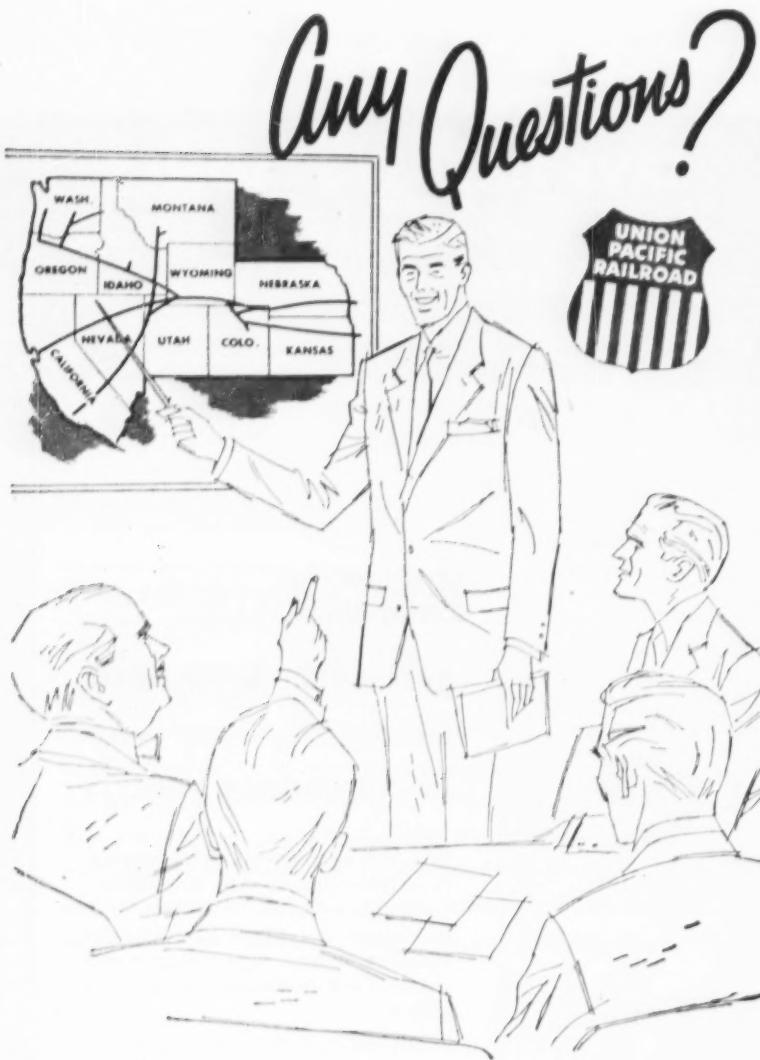
Have representative call. Date \_\_\_\_\_ Time \_\_\_\_\_

Attention \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



## May we help you in selecting a plant location?

In our Omaha headquarters we have accumulated a vast amount of factual information covering the eleven western states served by Union Pacific.

This information is kept up to date through day-by-day contacts with our traffic representatives located in cities and towns throughout that area.

So, if you are planning to build a plant for warehousing, distribution, assembly, or what not, in the growing West, it is quite possible that we can help you in selecting a location that will meet your requirements.

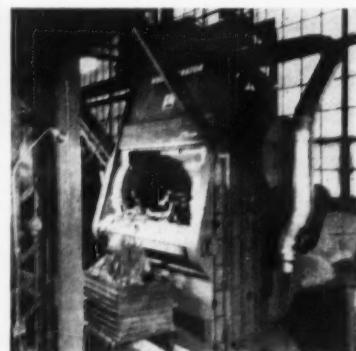
For confidential information, ask your nearest U.P. representative to call on you, or contact—

INDUSTRIAL DEVELOPMENT DEPARTMENT  
UNION PACIFIC RAILROAD  
Room 421, Omaha 2, Nebraska

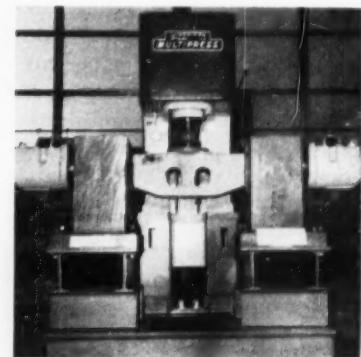
**UNION PACIFIC RAILROAD**

### NEW METHODS & MATERIALS

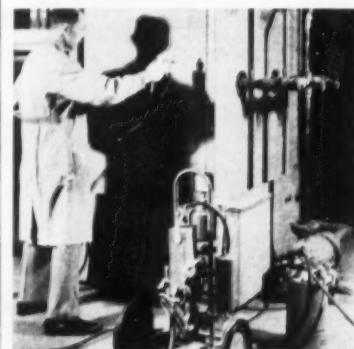
#### *Production tips*



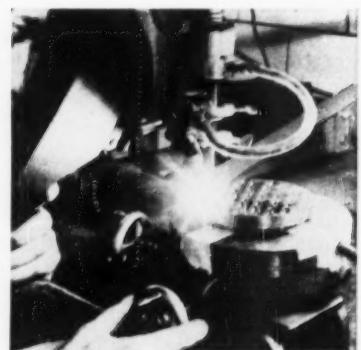
**FASTER BLASTER:** Designed to hurl higher volumes of abrasive at higher speeds, this new blast cleaner, the American Wheelabrator airless abrasive *Super Tumblast*, is said to be unusually efficient and economical in operation. It can be used to clean and descale almost any part that can withstand tumbling.



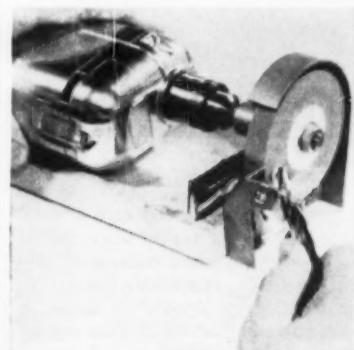
**PRESS TESTER:** Simulated service testing a railroad car springs and snubbers was a time-consuming job until this new setup was devised, Denison Engineering reports. Now railroad car trucks are suspended as shown and subjected to continuous pressure-release cycles by the ram of a Denison *Multipress*.



**PORTABLE HEATER:** Growing acceptance of hot paint spraying techniques led to demand for portable paint heaters that could be used in the field. To meet this need, DeVilbiss Company now offers the unit pictured here, claims it can help reduce painting costs, improve the quality of the paint film.



**PRECISION WELDER:** Thin-walled tubes are safely welded with this new automatic device, Griscom-Russell Company (General Precision Equipment Corporation subsidiary) reports. In making heat exchanges with such delicate tubing, G-R uses an inert gas shielded tungsten arc welding process.



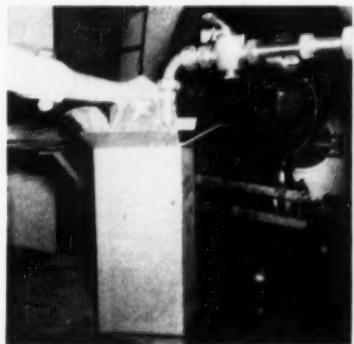
**HANDY SHARPENER:** An ordinary electric drill can be converted into a tool sharpener with this new attachment, according to Popular Manufacturing Company. Known as the *Drillmate*, the device consists of a three-inch grinding wheel mounted on a  $\frac{3}{8}$  inch- $\frac{1}{4}$  inch shaft, plus an adjustable tool rest.

## and packaging ideas

**SMART SHIPPER:** Gaylord Container put psychology as well as carton engineering to work in designing this Drumpak for Sherman Nursery. Sherman says cartons are handled much more carefully when people can see they contain a real, live tree; and shipments are safer than they would be if the trees were enclosed.



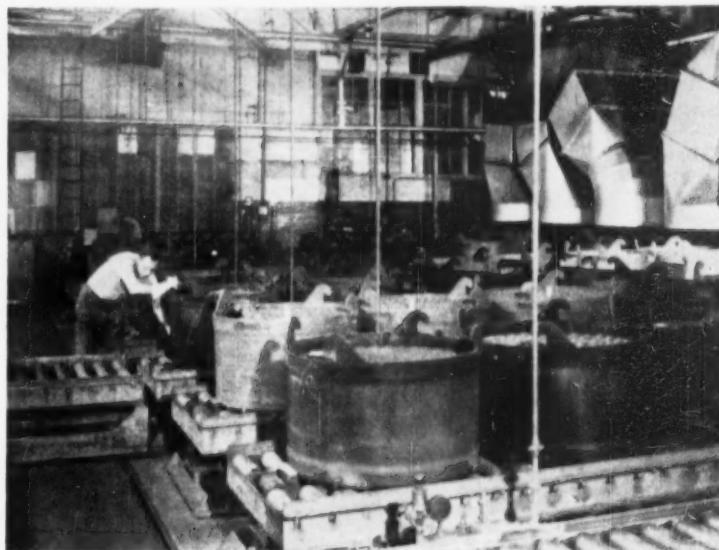
**LIFE-EXTENDER:** A safe, easy-to-handle polyethylene bottle provides maximum convenience for dry charged battery distributors, yet permits long-term storage, Globe-Union says. Since battery and fluid travel as a unit, they create no extra handling problems; yet battery isn't activated until fluid is in.



**DOUBLE WINNER:** This carton not only won two awards in Folding Paper Box Association competition, but is also winning new sales for Bissell Carpet Sweeper by helping to turn a humdrum product into a gift item. The carton was designed and made by ACM Division of Robert Gair Company.



## Very Few CONVEYING PROBLEMS are New to Us...



A system of spring-mounted roller conveyors, with transfer car, handling heavy pots in which pins and bushings are carborized.

Every day some manufacturer runs head-on into a conveying problem that's new to him . . . a handling job that he hasn't had to do before. It may be a package of unusual size or shape, or there may be unusual characteristics regarding space, temperature or weight.

Whatever the problem might be, chances are, we've done something like it, somewhere, sometime before.

That's where experience pays off, and you get the benefit of fifty years of it when you buy Mathews Conveyors.



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SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . . . MATHEWS CONVEYER COMPANY, LTD.  
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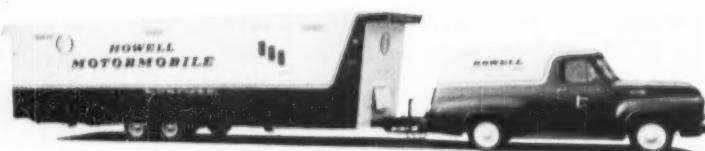
Engineering Offices or Sales Agencies in Principal American and Canadian Cities.  
Export Representative—Foreign Trade Division of New York Hanseatic Corp.

# MATHEWS



## THEY STUDIED ITS SPLIT SECOND STOPS

*... and sold themselves on a superior brake motor*



Visitors to the Howell Motormobile are intrigued by the Howell brake motor that's shown in operation. They push a button, watch the braking action through a plastic window and note that the motor shaft stops dead in the space of a watch tick. While the shaft is kept from turning until the motor is re-energized, a manual release permits re-indexing, an important safety feature on many machines.

Someone in the group always gets down to the design details of the separate brake mechanism displayed. Which is our cue to show them the easy adjustment for wear that is built in...and the fact that the Howell disc brake takes less space than any other mechanical brake. That's because it is inherently more compact

and because its wrap-around cover requires no end space for removal.

You might suppose that only machine designers or maintenance men would study such details. On the contrary, company executives and operating personnel of every rank show real interest. Perhaps it's the *ideas* in action that stimulate their interest.

Whatever the Motormobile's attraction, we've been pleased with the number of concerns that have become Howell customers this last year through contacts made this way. We hope you see the Motormobile in '56... but if it isn't scheduled for your locality, let us tell you about Howell industrial motors. For information on practically any type, fractional through 300 horsepower, write Howell Electric Motors Co., Howell, Mich.

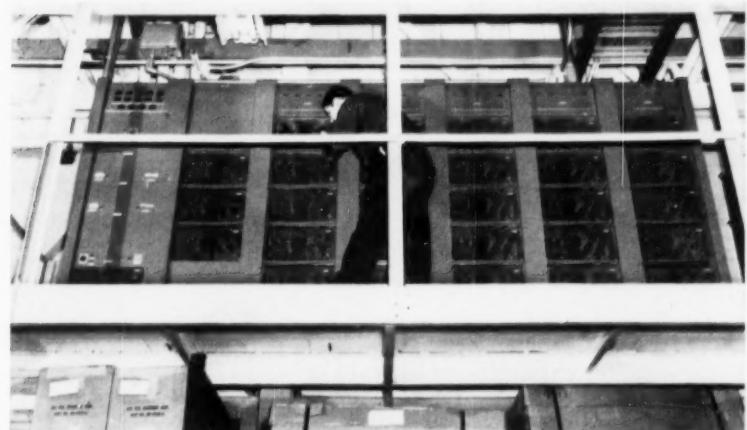
**HOWELL** *motors*

*... precision built for industry since 1915*

## THIS SOUND SYSTEM TESTS ITSELF



Sound system spots own failures on this light panel at key mike station.



At amplifier rack are ready-to-use spares and second set of "out" lights.



Portable mike and pre-amplifier may hook into the system at many points.

*Electronic "watchdog" key element in alarm and paging system.*

BUILT-IN, automatic priority for messages of varying urgency is one of a number of unusual features in a highly flexible emergency alarm, paging, and general plant-communications system in two new Ford Motor Company plants in Mahwah, N. J., and Louisville, Ky.

A continuous self-testing device, which uses a subsonic signal to test each of the system's 20 power amplifiers every 10 minutes, activates both visual and auditory signals in the plant protection office whenever an amplifier is operating improperly. This feature, says the DuKane Corporation, St. Charles, Ill., manufacturer of the equipment, was developed as a result of study of the disastrous General Motors plant fire at Livonia, Mich., in 1953.

The system includes separate fire alarm, evacuation alarm, and time signals, all electronically produced and thus eliminating the need for separate system of bells, buzzers, gongs, horns, and sirens.

Top priority is given a microphone in the plant protection office, which, in use, automatically cuts off all other signals. At this station, also, is located an alarm board on which a red light shows up for any station which has failed to receive and amplify properly the periodic subsonic signal. A buzzer supplements the lights to alert protection personnel if they are not watching the panel. Above the panel is a plant layout chart to aid protection personnel in giving accurate instructions to fire fighters and safety directions to others.

Next in priority—cutting off all but the plant protection office microphone—is an electronically produced evacuation alarm which

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SHOP FORMS 70%  
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DUPLICATING PLATES

The urgent problem of the Waukesha Foundry Company was to streamline its 17-part combination invoice and shop-copy forms. Aside from being obviously unwieldy, the old system absorbed countless manhours in typing and checking—and presented many chances for transcription errors.

The invoice set was reduced to five parts. The necessary shop copy forms containing all the vital technical data for each job are reproduced from Colitho Direct Image Paper Plates.

The total parts of the invoice set are reduced by more than two thirds, transcription errors are automatically eliminated and costly hours of retyping and checking time are saved. And the same Colitho Plate produces all shop-copies—uniform, original-looking copies—in perfect registration and in any amounts required.

- This case history demonstrates the economy and efficiency that countless businesses now enjoy through the use of Colitho Plates. We have a collection of these factual stories which you'll find packed with valuable ideas. Just use the coupon and you'll receive your copy of the Colitho Idea File promptly.

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# INTEGRATED CONVEYOR SYSTEMS

BY

## *Service..*

### CUT PRODUCTION COSTS

#### ENGINEERING

*Service* has 30 years of engineering skill to provide the answer to your particular materials handling problems. A Service Engineer will gladly consult with you.

#### MANUFACTURING

*Service* has the complete facilities to produce specially designed integrated conveyor systems engineered to cut production costs.

#### INSTALLATION

*Service* maintains a corps of experienced installation specialists who erect and put into operation each Service conveyor system.

*Serving the Automotive, Foundry, Rubber and Metal Working Industries*

*Service* CONVEYOR CO.

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DETROIT 10, MICHIGAN



sounds like a standard air raid alarm warble. Next in precedence is a fire alarm signal producing a sound—electronically—which is like an air horn blast.

A time signal, simulating the tone of electric gongs and operated by electric time clocks, fits into the priority system at this point, and is followed by two microphones at the plant's telephone switchboard, used for paging personnel absent from their offices.

Further down the priority hierarchy is the microphone in the plant manager's office, used for making direct announcements to employees, and at the bottom of this electronic totem pole is an auxiliary input which makes possible the playing of radio programs, tape recordings, phonograph records, or wire recorded music. Louisville plant employees last year, for example, heard the World Series, plantwide, but the game broadcasts were subject to automatic interruption at any time that any of the other six applications of the system were made.

Localized sound amplification in the plant cafeterias during meetings or conferences is provided through portable microphone and pre-amplifier ensembles hooked into the central system.

The self-testing device flashes a red light indicating a failing out-

let, not only in the plant protection office, but at the location of banks of amplifiers. Two spare amplifiers, equipped with patch cords, stand ready for immediate substitution in case of failure of any unit.

According to DuKane, the system was tested in target structures one and two miles from the site of explosions in a nuclear civil defense test at the Nevada Proving Grounds last Spring and withstood shock, heat, radiation, and flying debris. It was still in operating condition, and sending out its self-testing signals when examined 24 hours after the blast.

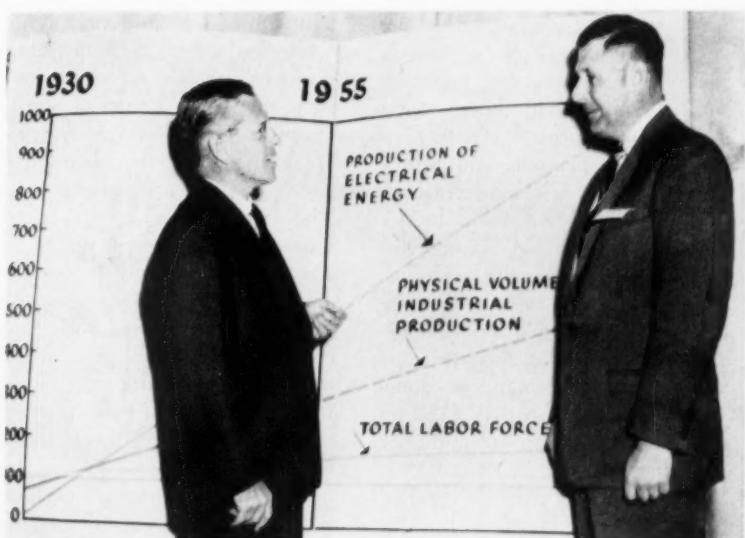
#### *Off-the-job safety*

Increasing awareness of the heavy cost of absences and injuries due to off-the-job accidents has moved many companies to combat employee carelessness at home and on the highway.

Adequate data has always been lacking, however, as to how big the problem is and where to tackle it.

Now the Off-the-Job Committee of the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. proposes to supply the lack by collecting data from individual companies on a standard form.

Copies of a form for keeping uniform records, the Monthly Summary of Off-the-Job Accidents, may be obtained from the Committee.

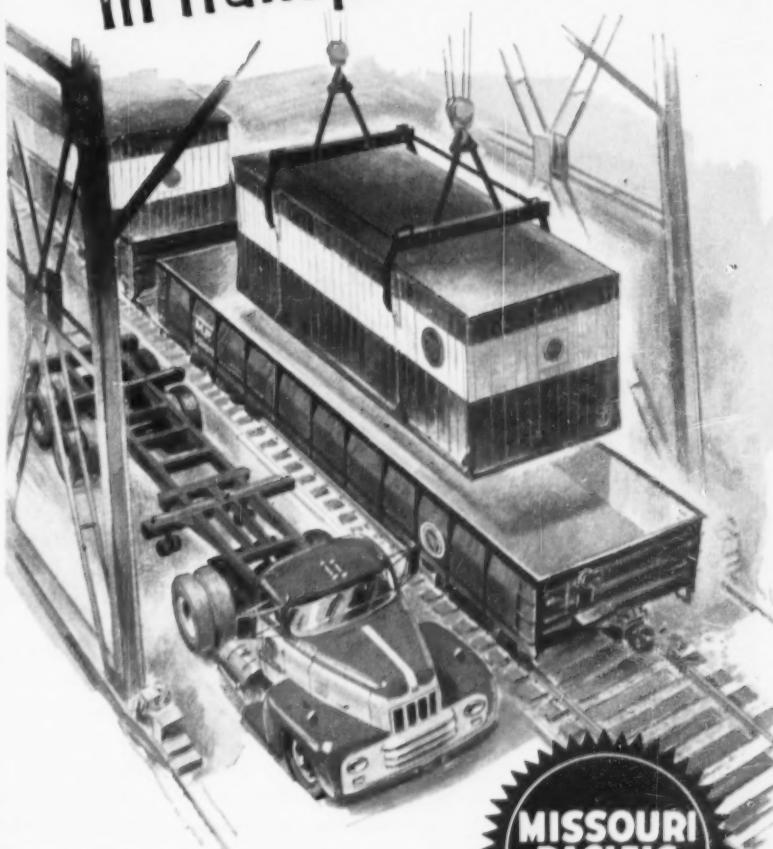


*More mechanization, more productivity needed*

Far from putting men out of work, more mechanization of industrial processes will be needed in the next 25 years to maintain the nation's present standard of living, Louis Polk, president of the National Machine Tool Builders' Assn.

and of The Sheffield Corp., Dayton, Ohio, (left) told a recent electrification forum of the Westinghouse Electric Corp. Behind Polk and J. R. Challinor (right) of Westinghouse is chart of factors on which his prediction was based.

# Pioneering the MODERN PACE in transportation

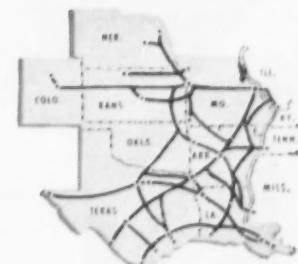


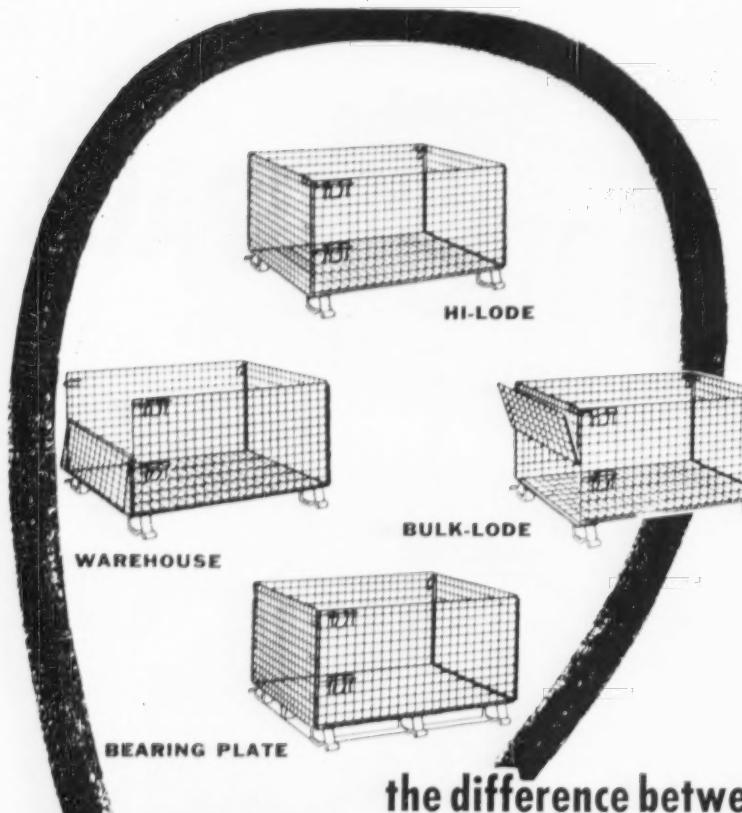
#### **MO-PAC finds a better way to give a truck a "LIFT"**

Missouri Pacific combines rails and roads in a brand new way to move your merchandise faster, safer.

Unlike conventional "piggy back" only the trailer body moves by rail. It is lifted from its chassis by crane and can be cradled in any open-top freight car. At rail destination, the trailer body is replaced on a truck chassis . . . then whisked away for final delivery. Mo-Pac's version of train-truck transport (now available between St. Louis and Kansas City) cuts handling time and speeds delivery.

Another Mo-Pac first . . . another example of how we plan for transportation progress!





## the difference between PROFIT and LOSS . . .

. . . is determined by your efficiency in handling parts and products between successive production stages—shipment and delivery.

And . . . if you're interested in reducing high handling costs in your plant, send for Union Steel Products Company's big, new Palletainer catalog.

It quickly and concisely shows many different Palletainer applications which represent the latest methods of handling, storing and warehousing. Construction features and complete specifications on the broad range of models available are also covered.

See for yourself how USP Palletainers will quickly and easily pay for themselves in your plant. Union Steel's Material Handling engineers will be glad to assist you in determining the proper equipment to match the job—without obligation. Why not start today?

## MIDDLE MANAGEMENT

*Continued from page 46*

adolescence. The early carefree attitudes give way to a fumbling for stability.

Some middle businesses have difficulty in reaching this realization. It was remarked recently that some rapid growth enterprises go through six transition stages. First, sales grow so rapidly that the management loses a sense of proportion regarding expenses. Secondly, a sort of "I know, I know" attitude begins to prevail, so that erratic decisions are made because of refusal to consult more experienced counsel. There is also a tendency to refuse to heed the opinions of subordinates. Thirdly, the principals develop a wrong sense of timing, decide to branch out in all directions at once, without too much regard for market prospects and capital limitations. Fourth, the personal standard of living gets out of line. Fifth, creditors begin to become restive. Sixth, come the inevitable trials and tribulations out of which either the hard knocks teach the management sense or the business founders.

In some medium-sized businesses, the struggle for management maturity is reached successfully for a time only by placing the entire management responsibility on the shoulders of a single individual. Such "one-man management" may prove to be so successful that the stockholders complacently overlook the eventual necessity of replacing him. All too often, there are no trained replacements to succeed him.

Hit-or-miss planning and lack of firm policy is a characteristic of some family owned businesses whose ownership has become dispersed among several generations. Things go along fairly well when times are good. When times change and profits dwindle, disagreements arise as to what should be done. These disagreements may wind up in withholding complete authority from the executive in charge.

Four examples may be cited of family owned businesses which have disintegrated in this manner. In one, the management is completely discouraged, and is about to resign. In the second, a receivership action is under way. In the third, the warring factions have sold out to an outside concern which was interested in acquiring patent rights

to the product. The fourth concern, in spite of product improvements which have resulted in substantial new orders, is undergoing a renewed feud among the stockholders as to how to market the product.

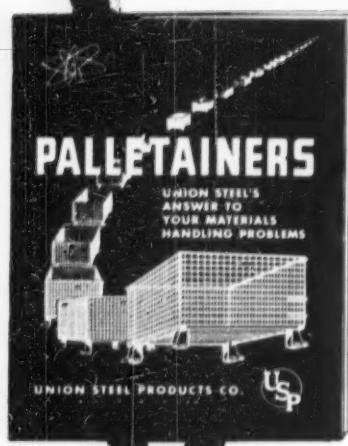
Small businesses, which often can afford to play the management tune by ear, sometimes make the transition to middle business without understanding that larger scale operations require a firm, formulated policy. Some time ago, such a concern was endeavoring to expand its market. Unfortunately, the company couldn't seem to control the star salesman. He was a good producer, but simply would not call on some potential customers "because he didn't like them." Yet the sales manager hesitated to take action for fear that the salesman would resign.

In contrast, another company with a similar problem decided that either the executives were going to manage the salesmen or else the salesmen would manage the company. A clearcut policy, though drastic, was worked out in advance, then put into practise. Sales territories were cut, and more salesmen hired. By working the smaller territories more intensively, it was found that the original salesmen were able to increase their commissions, and the concern itself obtained more sales and more profits.

Obviously, there are many middle businesses which represent something more than a series of horrible examples. There are many which are growing rapidly, planning effectively, and learning as they go. They have installed up-to-date techniques and improvements in the shop, warehouse, and the office.

In a word, these are companies which have outgrown their short pants. At the same time, as they reach for full maturity, the very fact of their size creates problems that revolve around the factors of margins and money.

One of these awkward problems is the difficulty in obtaining trained specialists. As Herbert Barchoff, president of Eastern Brass & Copper Company, Inc., puts it, "The larger business can afford specialists in every line and staff management which one-man management must take upon its shoulders. Decisions can be made with far greater accu-



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UNION STEEL  
PRODUCTS CO.

Albion,  
Michigan.

racy (in the larger business) because of the ability to afford more accurate and detailed information on which to act . . .

"The efficiency experts, technicians, sales specialists, labor relations men—all the perimeter services which are basic to business success to-day, are part of the larger business pattern, but a luxury for the small business man."

A second real problem is the need for more mechanized equipment, not only in the factory for materials handling, but also in the office. The equipment costs money to buy—and it costs money to maintain. And it must be kept working. This, in turn, necessitates sales expansion which means more capital.

### Getting the Money

There are three ways to obtain the capital. The first is from earnings, the second by borrowing, the third by equity financing.

To-day's retained earnings are limited not only by taxes, but by shrinking profit margins on sales. The bitterness of the competitive battle among medium and small businesses is reflected in several ways. One is cost absorption. When big industry negotiates new wage contracts, resultant price increases usually follow. The wage concessions then become a type of pattern for the smaller producers. But the latter, with proportionately much lower shares of the available market, cannot pass along the same ratio of increased costs in their prices.

In the present period of sales expansion, the business of waiting for added capital from retained earnings to catch up with sales growth requires patience and fortitude. A middle business may borrow, of course. But borrowing is costly, and term loans may not be attractive for lenders to make if they are in low multiples. Obviously, a concern requiring \$300,000 or so in term capital will hesitate to borrow in amounts of \$1 million or so. But the Small Business Administration limit for loans is \$250,000.

The prospect for financing in equity markets poses difficulties. A young, growth enterprise must, above all, show a continuous record of earnings to attract new investors. Yet the earnings of medium-sized concerns often fluctuate.

The initial costs of equity financing can run high. Sales of com-

pany stock will cost the company about 10 per cent of the proceeds in underwriting commissions; legal fees are additional. The brokerage fees for placing a term loan will bite into these proceeds.

Equity financing can be a mixed blessing. Some concerns which build dream castles based on what they might accomplish with more capital might be better off without it. Ambition is good, but more effective when led by experience.

When all is said and done, the strong point of middle business is its flexibility, much of which is based on its independence. After such a business has financed extensively, it must consult with directors or outsiders whose funds have been newly invested. The pace of decision making slows. Yet the strength of the stockholder managed enterprise is its unfettered ability to make decisions rapidly—to take prompt action when circumstances dictate. A few officers sitting around a desk can initiate momentum that might be the envy of more cumbersome larger concerns.

Size, moreover, may not be wholly a handicap. The smaller company is close to and appreciative of its customers. Often, it can beat out the larger competition through service.

The smaller company is adaptable. A good example is a medium-sized electronics company specializing in data processing equipment. We asked a representative of this concern whether competition from the larger electronics companies might not dominate the industry. "Oh no," was the reply. "We don't worry about them at all. The big companies produce a product and then try to get their customers to adapt their operations to the product. We adapt our product to the operation of the customer."

Then we asked if the smallness of his company posed any advantages. "Sure," he replied, "we're flexible. The big fellows don't think the way we do."

Middle business enjoys the blessings and energies of youth. Youthfully, it is inclined to over-tax its energies at times. It often lives for the day, as though there would be no to-morrow. Its great lesson, it seems here, is to learn how to conserve some of its energy. For to-morrow will come, and the adolescent will reach maturity through growth, if qualified for survival.

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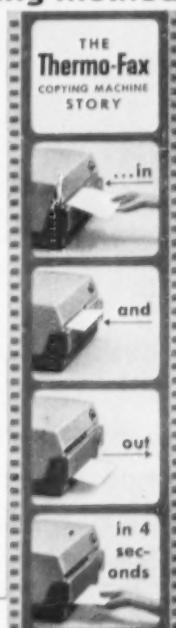


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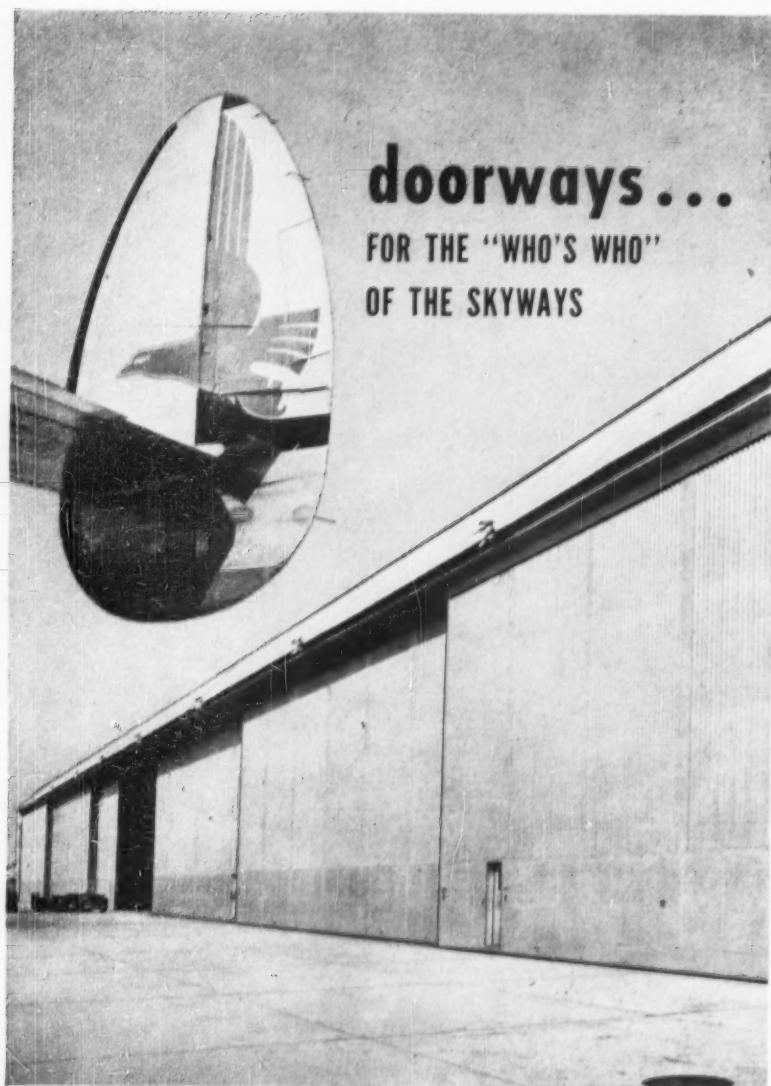
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## doorways... FOR THE "WHO'S WHO" OF THE SKYWAYS

*Hanger #9, New York International Airport. Planned and built for Eastern Air Lines by New York Port Authority. Contractor, Caldwell-Wingate Co. International-built hanger doors provide two openings, each 33 feet high and totaling 461 feet in width—a combined entrance area stretching the length of some 1½ average city blocks.*

**INTERNATIONAL-BUILT DOORS** for aircraft hangars and industrial plants alike are designed to assure these two prime advantages: (1) Fast, easy operation under any climatic conditions. (2) Lifetime weather-tightness. Sound reasons why more and more major names in American aviation and industry are served by doors "tailor made" by International.

See Complete Catalog in Sweet's  
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# HIGHLIGHTS & sidelights

comment by

Annesta R. Gardner

### Bright idea boosts heavy products

Do you think your product is unglamorous and hard to sell? Take a tip from Allis-Chalmers' newest direct-mail campaign, aimed at original equipment manufacturers.

It consists of seven mailings: First comes the tiny screwdriver (see below) labelled "M+D+C+P=?"

A few days later, the base arrives. Then, one after another, come motor, coolant pump, and Texrope V-belt drive. Each is accompanied by a well-written letter, assembly instructions, and literature on Allis-Chalmers equipment.

Who can resist putting them together—and reading the A-C sales literature that goes with the assembly instructions?

Finally, there it is—a complete Motor - Drive - Pump - and - Control unit, operating on a storage battery concealed in the base, and emphasizing Allis-Chalmers' sales point: It offers co-ordinated products, engineering, and service on all four lines.

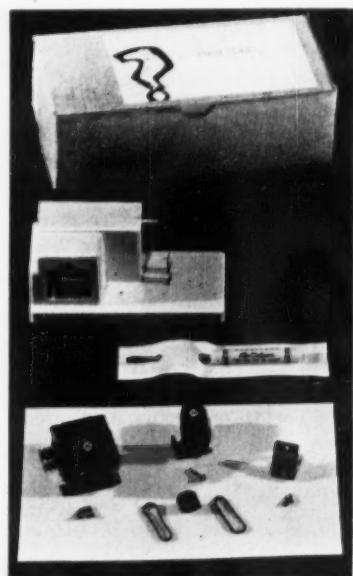
Pictured at the right are the individual parts of the model assembly and one of the packages used for

mailing. Below is the completed unit. And it really does work.

### Conditioned for sales

Design pointers that apply to many products can be found in a masterful study of room air conditioners—who buys them, when, and how—prepared by the Kinetic Chemicals Division of Du Pont.

Based on more than 13,000 inter-



views, the study documents consumer demands for near-perfect mechanical performance. Users want equipment that is really noiseless, requires almost no space, and is fully automatic—and they want it to look perfect as well.

A shift in preferred location for air conditioners from bedroom to living room (even when there is only one unit) is bringing with it a demand for better styling and a shift toward lighter colors.

Strangely, though rusting of the outside of the unit was a common complaint, only a third of the owners took positive action (painting or protective covers) to prevent it. Says DuPont, "Perhaps the industry should tell owners how to protect their units, and encourage the marketing of protective materials. . . ."

But why not use corrosion-resist-

ant materials or provide a better finish in the first place? That could be a real sales advantage.

#### Out, out . . . spot!

Is your product compatible with gravy? Does it mix well with tar?

Perhaps you think these are not important. But it's surprising how many materials turn up in odd places—and how often the best-laid product plans are foiled by materials the product was never supposed to encounter.

Take clothing: The National Institute of Drycleaners reports that 30 per cent of clothing stains are caused by albuminous foods—gravy, milk, eggs, and the like. That's to be expected. Beverages, too, are high on the list.

But did you know that model airplane glue and rubber cement ac-

#### Architectural trend?

Buildings-in-the-round are getting to be quite the thing these days. Builders claim circular structures now can offer substantial savings in space, and in heating and cooling costs. Service areas can be centralized (see photograph below) and supply lines shortened.

Says architect Welton Becket, "The new Capitol Tower was not designed 'round' because it was to house the international headquarters of a phonograph record manufacturer. . . . It is based on good architectural principles and carefully evaluated economics." Capitol Records seconds this statement.



Capitol Tower is functional as well as decorative; makes extensive use of aluminum and enameled steel.



Circular layout centralizes service and storage areas, simplifies lighting, heating and cooling; yet leaving plenty of working space, as picture shows.



#### Here's a much easier way to keep track of your staff!

Imagine the efficiency of an inter-communications system that puts you in touch with any member of your organization—in matter of seconds.

You can have such a system without spending a cent of capital funds by using the Stromberg-Carlson plan.

#### FAST COMMUNICATIONS ON LEASE

A complete sound system—from the simplest telephone intercom to a large-scale internal broadcasting network—can be made to order for your specific needs. And it's yours on Stromberg-Carlson's unique lease plan . . . not a penny down!



**NO OBLIGATION** • Find out how you, too, can benefit from a Stromberg-Carlson sound system—already in widespread use in business, industry, schools, hospitals, hotels, ocean liners—wherever there's a need for fast, efficient internal communications.

Mail coupon today for a free survey of your needs.

#### STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

1704 UNIVERSITY AVE. • ROCHESTER 3, N.Y.

I want to know more about how to keep track of my people. How much will your lease plan cost me? Please send a man to survey my premises and suggest a system to meet my needs. No obligation.

Company \_\_\_\_\_

Address \_\_\_\_\_

Person to see \_\_\_\_\_

*"The Royal  
knows the people  
you want to meet"*



Over 850 branches in Canada,  
the West Indies, Central  
and South America, New York,  
London and Paris.

## THE ROYAL BANK OF CANADA



HEAD OFFICE: MONTREAL  
New York Agency—  
68 William Street, New York 5, N.Y.  
Assets Exceed 3½ Billion Dollars

count for nearly as many stains as coffee and tea; and tar, shoe polish, and picric acid take their appreciable toll?

Is clothing a special case? Just wait until a mechanic puts his sandwich down on your product while he's working on it—or until someone uses it for a shoe rest while he shines his shoes.

### How soon? How fast?

Do you get impatient with the slow headway made by new techniques and materials?

Are you perhaps in the position of Frederic B. Stevens, Inc., Detroit builder of metal-finishing equipment? Stevens was all ready in 1945 for a rapid shift to aluminum in consumer products. As a result of wartime progress in this material, Stevens expected plenty of orders for its automatic aluminum anodizing equipment.

It took ten years for those orders to materialize.

Why? As Frank Watt, Stevens' general sales manager, explains it, "We knew the tremendous potential of anodized aluminum, but the buying public still had to be sold."

Now, thanks to the combined efforts of primary metal producers, fabricators, and finishers the selling job has been done, and orders are rolling in.

The moral: Never overestimate the rate of acceptance of a new idea—or underestimate the help it will need.

### Easy reading about good writing

To be successful, advertising copy must look interesting, be interesting, and look easy to read, says Guernsey Van Riper, chairman of the board of Caldwell, Larkin & Sidener-Van Riper, Inc. In *Words at Work in Advertising*, he tells how to do it, has suggestions for business writers as well:

Write what comes naturally. Know what is to be said, and say it as if you were speaking it.

Get to the point—and get finished. Don't drag out your message.

Use short words . . . short sentences . . . short lines . . . short paragraphs.

Remember that the reader is more interested in himself than in you. Tell him what *he* wants to know.



Bring checkroom efficiency to the church and Sunday School. Keep wraps in an orderly manner—aired, dry and "in press". No. 3 wall racks come in any length to fit; 4 spaced coat hangers and hat spaces per running foot. Mount on wall at the desired height for each age group.

The 5 ft. Portable No. 50 Checker accommodates 50 people, goes wherever needed on large ball-bearing-swivel casters. Answers the wraps problem in vestibules or for meetings, dinners, etc. Efficient, sanitary, fireproof and quality built for lifetime service of welded, heavy gauge steel with square tubular columns.

*Write for Bulletin CK-2*

Wardrobe units for every church need including portable umbrella and overshoe racks for entrances, and storage racks for robes.

**VOGEL-PETERSON CO.**

*The Check Room People*

1127 West 37th St., Chicago 9, Illinois

\*\*\*\*\*  
If you want to know . . .

### HOW TO MAKE BIGGER

## INVESTMENT PROFITS

### \* Be Sure to Read This Ad \*

In this period of continuing market changes it will pay you to learn how to plan your portfolio to meet your investment objectives . . . to know what are experienced by others. **INVESTOR'S FUTURE** . . . **HOLD** . . . how you can take advantage of today's market opportunities. You can get all of this valuable help in the next 3 issues of **INVESTOR'S FUTURE**—the fast growing magazine for the alert investor.

You'll get: 300 STOCK RATINGS (100 each issue) in our new Future Trend Service—average portfolio for greatest income, capital gains and diversification . . . plus 45 other features with unheeded recommendations by financial authorities.

**JUST CLIP \$1.00** and mail today with your name and address to:

**INVESTOR'S FUTURE**

Crystal Lake 63, Illinois



you can **CUT COSTS**  
**SAVE SPACE** with  
ready-reference  
**STAX ON STEEL**  
**TRANSFER FILES**

...the top quality corrugated  
fibreboard file with exclusive  
ALL-STEEL FRAMEWORK! 5 sizes.  
Clip this ad to your business  
letterhead for complete  
facts and **FREE "HOW TO"**  
storage practices booklet.

**BANKERS BOX CO.**, Dept. DR-7  
720 S. Dearborn St., Chicago 5, Illinois

## BETTER MARKING EQUIPMENT by industrial

### FOR PRODUCTION LINE

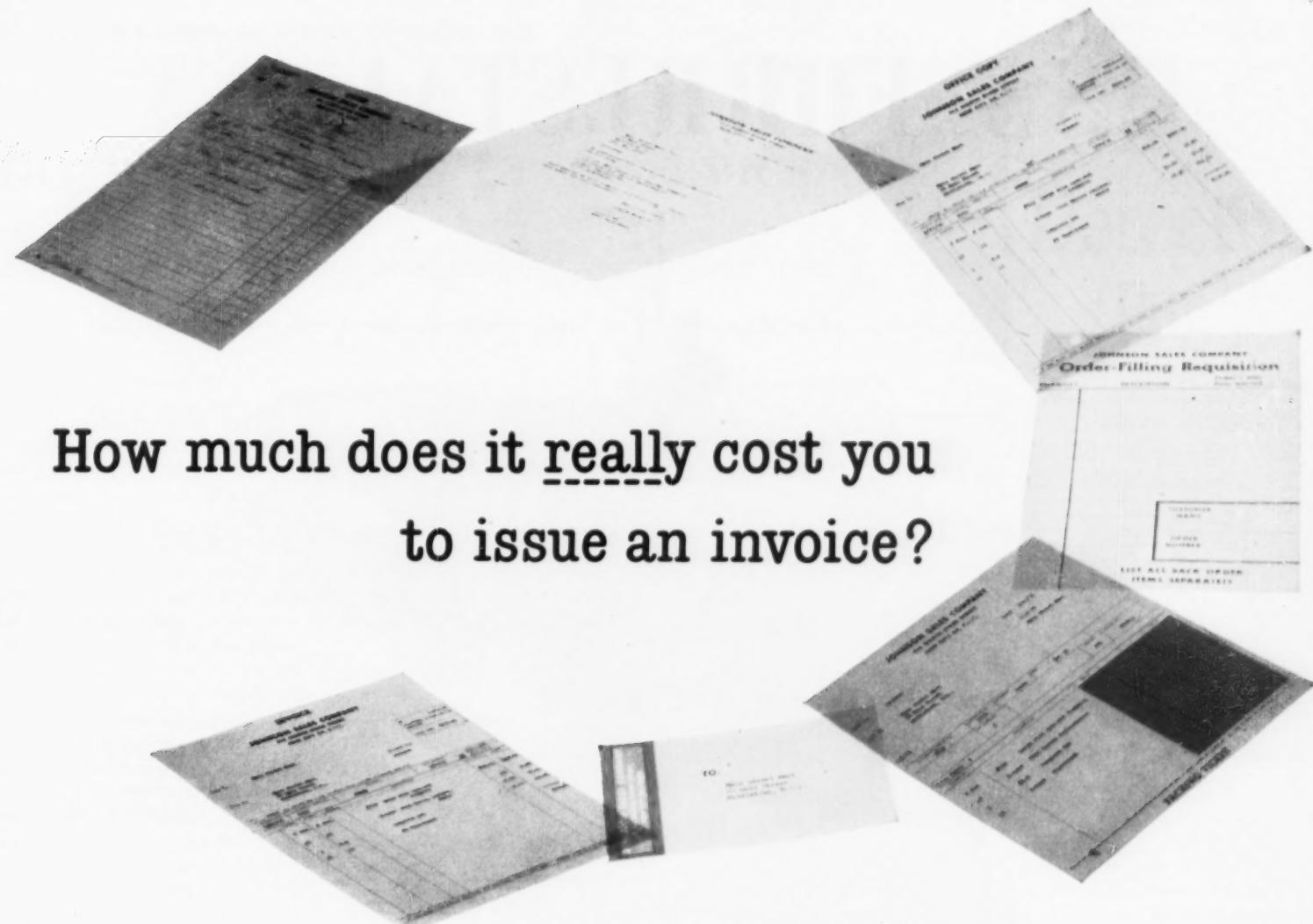
**MARKING, DATING AND CODING**  
Unmatched for high speed performance and economical, efficient operation.

Before you make any decision on marking equipment, get full information on Industrial. You'll be glad you did!

*Write for Industrial's new Catalog — today.*  
Dept. DR.

**Industrial M arking E quipment**  
COMPANY, INC.  
454 Baltic Street, Brooklyn 17, New York  
Main 4-2801

**Gemar Associates**  
CONSULTING  
**MATERIALS HANDLING**  
ENGINEERS  
over 20 years experience  
Greenwich, Connecticut



## How much does it really cost you to issue an invoice?

**E**ver add up the time and expense that go into writing, re-writing and re-typing a customer order? You'd steam at the high cost.

Ozalid's new "Direct Copy" System ends this needless waste of time and expense, completely does away with costly "repeat writing" at every step. In seconds, Ozalid produces all the varied copies your business requires to fill and bill an order. You save the costly personnel time now required to turn them out by repetitious re-typing and hand-copying. Shipments and bills get out sooner. Irritating copy errors are automatically eliminated.

Ozalid ends "repeat writing" and wasteful duplication of

paperwork in dozens of operations. Sales, purchasing, production, accounting, engineering—in each of these, Ozalid replaces manual transcription with inexpensive "direct copying."

An Ozalid machine will make instant, dry copies of anything written, printed, typed or drawn on any paper that transmits light—at the lowest cost-per-copy of any copying process. Actually, a letter-size sheet of chemically treated Ozalid paper costs you *less than a penny*.

End the high cost of "repeat writing" in your business. Have your systems man or office manager talk it over with his nearest Ozalid representative. See phone book or write: Ozalid, Dept. C-7, Johnson City, N. Y.



**OZALID®**  
DIRECT COPY SYSTEMS

A Division of General Aniline and Film Corporation. In Canada—Hughes Owens Co., Ltd., Montreal

# USS FORRESTAL



Equipped with **VICKERS®**  
**HYDRAULIC GEAR**  
... both components and complete systems

"Versatility and dependability of Vickers Hydraulics are demonstrated again by the selection of Vickers equipment for facilitating reliability in the handling of carrier aircraft and in various ordnance and navigational equipment aboard the supercarrier *USS Forrestal*."

Vickers offers outstanding experience and background in the design and application of

hydraulic pumps, motors, cylinders, and control components for systems of the type used on the *USS Forrestal*. Vickers has the most complete line of hydraulic equipment . . . undivided responsibility means compatibility of oil hydraulic equipment for optimum operation. Five plants strategically located bring Vickers unmatched facilities close to you. For further information ask for Bulletin 5300.

**VICKERS INCORPORATED**  
DIVISION OF SPERRY RAND CORPORATION  
ADMINISTRATIVE and ENGINEERING CENTER  
Department 1424 • Detroit 32, Michigan

Application Engineering Offices: ATLANTA • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES AREA (El Segundo)  
MINNEAPOLIS • NEW YORK AREA (Summit, N.J.) • PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon) • PORTLAND, ORE.  
ROCHESTER • ROCKFORD • SAN FRANCISCO AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA • WASHINGTON • WORCESTER  
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto

7499

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Can your office safe  
pass this free

# "Risk Detector" Test?



FIND OUT. The amazing Mosler testing device shown above tells you in 2 to 5 minutes if your office safe really is a safe place for your records. Flashes up to 15 warning signals if it isn't. Stop wondering what would happen to your accounts receivable and other business records if a fire ever started. Find out. Then rest easy . . . or know what you should do. Mail coupon, right now, for your free Mosler "Risk Detector."

IF IT'S MOSLER . . . IT'S SAFE

**The  
Mosler Safe  
Company Since 1848**

World's Largest Builders of Safes and Bank Vaults

<b>FREE!</b>	
The Mosler Safe Co., Dept. DR-123 320 Fifth Ave. N. Y. 1, N. Y.	
Please rush a FREE Mosler "Risk Detector" to me at once.	
NAME . . . . .	ZONE . . . . .
POSITION . . . . .	
COMPANY . . . . .	
ADDRESS . . . . .	
CITY . . . . .	
STATE . . . . .	

## DO DISCOUNTERS GIVE SERVICE?

*How to promote your customers' products; how to make sure salesmen tell your product story; and are your salesmen overpaid?*

DISCOUNT HOUSES have been carving out an ever-increasing share of retail trade now for several years. Lower prices, of course, are a large part of the answer for their success. It is generally assumed that discount houses are able to cut prices consistently below list by sharply reducing those services normally offered to shoppers.

Not so, says a survey of 100 discount operations in the New York metropolitan area. According to this survey which appears in the Spring issue of the *Journal of Retailing*, published by the New York University School of Retailing, the common belief that discount houses offer no services or few services is hardly borne out by the facts. While department stores generally offer more services than discounters, the latter do offer a substantial range of

customer services and in some particulars—the helpfulness of salespeople—scored higher than department stores.

The price-cutting ability of discounters can be traced to such special methods as trans-shipping, which is made possible by volume selling.

### Trade Show contest pays off

Although many trade show exhibitors have found contests and give-aways disappointing as a means of attracting prospects to their booths (June 1956, page 46), here is a company which put a contest to good use.

The Wheelabrator Corporation of Mishawaka, Ind. decided to display its new blast-cleaning equipment on the stage of the convention

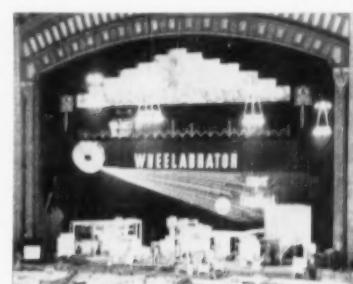


Script for selling tells inside story of product

**The problem:** lost sales at the retail level because of dealer confusion over the wealth of product literature. To this add the superficial sales spiel given by too many dealers' salesmen.

**The solution:** Norge Division of the Borg-Warner Corporation, Chicago, is

focusing promotion on five outstanding features of each appliance to cut down the weedy growth of product literature. In addition, transparent acetate strips provide salesmen with a complete selling script of the outstanding features of each appliance.



To get prospects on stage . . .



Use a helicopter.

hall at the recent Foundry Show at Atlantic City. This solved space problems but created another serious obstacle to the success of the exhibit. To enter the exhibit, prospects would have to climb several steps and walk out on the stage, an exercise for which many people seem to have a marked reluctance.

The solution: Wheelabrator awarded free rides in a helicopter—about 60 each day—to lucky winners among those who registered at the booth. The company feels that the fact that hundreds of registrants came on stage attests to the wisdom of this high flying promotion.

### No missing links here

What are some methods you can use to help your customers sell their products (see February 1956, page 48) and thus boost your sales to



## Cut costs

*— with multi-use Milcor Celluflor instead of wet-mass construction*

Because it serves both as a structural element and as a means for electrification, Milcor Celluflor was specified for use in the Transportation Center now under construction on the "Chinese Wall" site of the old Broad Street Station in Philadelphia's new Penn Center Development.

Although the building was originally designed for bar joist and reinforced concrete construction, plans were changed when cost comparisons showed that a "blend" of Milcor Celluflor and Floor Sections would do two important jobs in one installation — and for less money. The Celluflor "blend" design was specified for 15 of the building's 18 floors.

Other costs dropped, too! The Celluflor and Floor Sections were erected on beams set 1½ inches below the girder elevations, reducing the height of the building 2½ feet — a substantial saving in building materials.

These factors also influenced the change:

**a. Speed of erection.** Milcor Celluflor goes up fast, provides working and storage areas for all trades, accelerates the entire job.

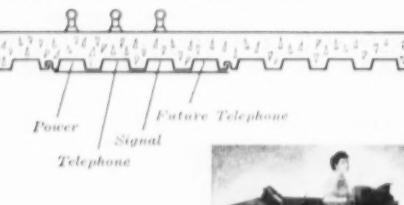
**b. More electrification.** The grouping of four cells on 6-ft. centers is a Celluflor exclusive not available in any standard underfloor duct system used with reinforced concrete. This means greater electrical capacity, wider latitude for changes in office layouts.

**c. Low maintenance costs.** Simplicity and economy of changes in electrical outlets is attractive to owners and tenants alike.

This Celluflor "blend" idea can be applied to a wide range of conditions. Call on us. Write for Catalog 270.

### MILCOR® Celluflor

*Cross-section of Celluflor installation in Transportation Center, Penn Center, Philadelphia, Pennsylvania*



Milcor Celluflor provides variable capacities to handle any type of electrical need. Cells can be spaced on 6-inch centers to permit the installation of service outlets at virtually any point on the floor.

**INLAND**  
INLAND STEEL PRODUCTS COMPANY  
DEPT. G, 4049 W. BURNHAM ST. • MILWAUKEE 1, WISC.  
BALTIMORE • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND  
DALLAS • DENVER • DETROIT • KANSAS CITY • LOS ANGELES  
MILWAUKEE • MINNEAPOLIS • NEW YORK • ST. LOUIS

them? Tee-Pak Inc. of Chicago, manufacturer of packaging materials for the food industry, is planning to pull out all the stops in its current campaign to help hot dog packers sell their wares. Tee-Pak makes a product—synthetic casings for skinless frankfurters—which never reaches the consumer but nevertheless the company is focusing its promotional efforts on the consumer.

Here are the promotional efforts Tee-Pak is providing:

National Hot Dog Month, replete with promotional kits, press releases of recipes, ads and so on, and of course, a National Hot Dog Queen.

A plastic cardboard phonograph record to be used as a premium give-away with frankfurter packages; it can substitute for the usual backboard in a one-pound package.

A retail merchandising display stand to bring related items—rolls, relish, kraut—into the refrigerated meat case to stimulate impulse buying.

Television commercials and advertising trailers for drive-in movies.

### Marketing briefs

The selling of non-food items in supermarkets is one of the fastest growing markets in the nation. Last year such sales nearly doubled the 1954 total and accounted for 12 per cent of all supermarket volume.

Reflecting this robust growth will

be the Superama, the National Supermarket Non-food Exhibit scheduled for September 10-13 at the New York Coliseum. Thousands of buyers for supermarkets are invited to inspect the exhibits set up by manufacturers and rack jobbers of household goods, drugs, sundries, garden tools, and many other products.

- Since the success of Cinerama movies, there has been a panorama of "rama" promotions. Maybe they will end when the shepherds decide to hold a ramarama.

- How do you check the quality of service in a self-service store? By observing and analyzing the built-in service features which can make the difference between money in the register and the no-sales sign. The accessibility of goods, clarity of price marking, cart traffic routing, appearance of displays and other features are now being checked by the Willmark Service System, New York which for almost 40 years has been a watchdog of personal selling practices in retail stores.

- Are your salesmen overpaid? This is the thought-provoking title of a new booklet which is yours for the asking from the Amos Tuck School of Business Administration, Dartmouth College, Hanover, N. H.

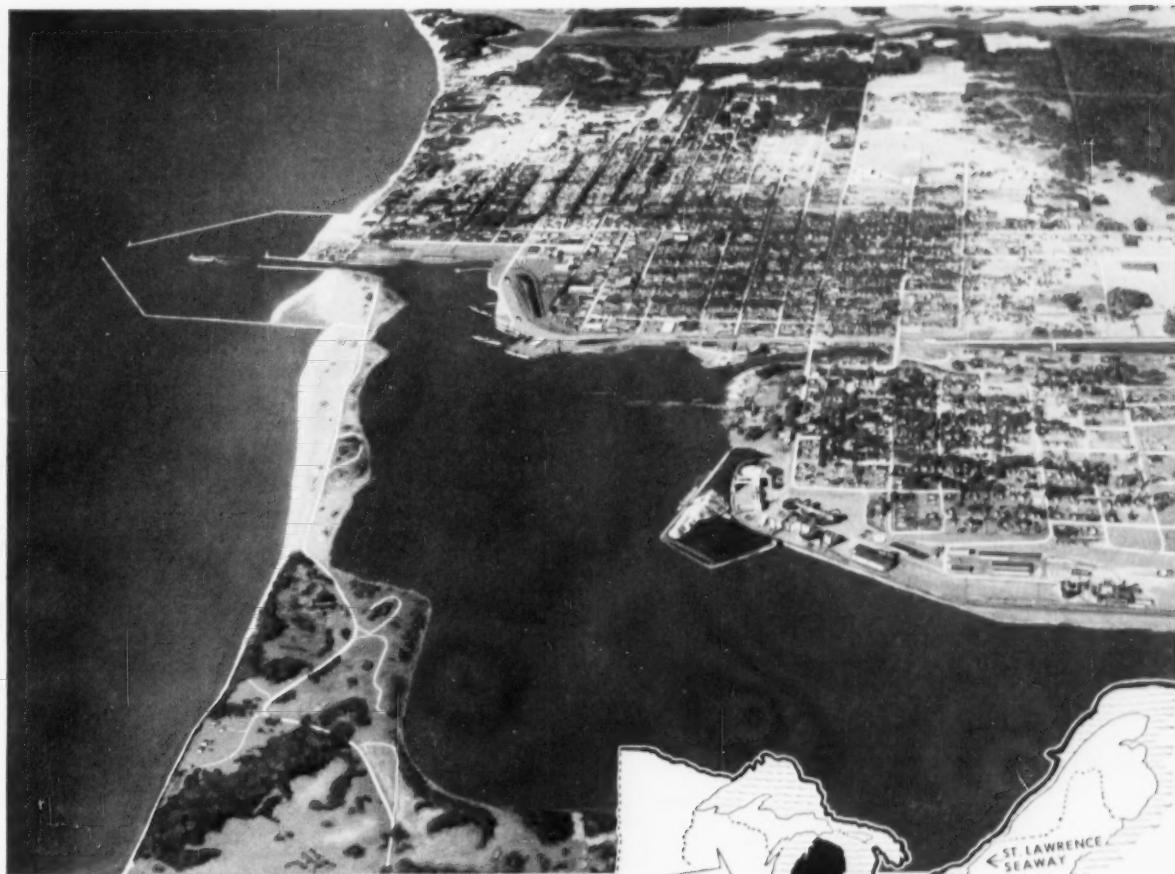
The author, Kenneth R. Davis, discusses the reasons for possible over-compensation and points to methods for determining fair pay for salesmen.



*For working girls with more money than time*

The Campbell Soup Company has discovered a new market for soup in the big-city department stores which are thronged by office girls during their lunch hours. Conceived by Charm

magazine, the idea has been adopted by two New York department stores. Secretaries can eat a light lunch in fifteen minutes and get on with the real purpose of the lunch hour—shopping.



Here's a DEEPWATER PORT  
Worth Investigating...

## LUDINGTON, MICHIGAN

Ludington is one of several fine Great Lakes ports in Outstate Michigan.\*

It's a Great Lakes port and a seaport too, since the Great Lakes-St. Lawrence waterway gives access to the ocean.

Excellent industrial sites are available on Ludington's sheltered harbor, Pere Marquette Lake, which is connected with Lake Michigan by a ship channel two-thirds of a mile long.

Ludington is a city of 10,000 people, with several times that number within easy driving distance. It is served by the Chesapeake & Ohio Railroad. Year-around railroad car and automobile ferries operate between Ludington and Wisconsin ports. Five motor freight lines provide trucking service to Midwest market centers.

Beneath Ludington lies a portion of Outstate Michigan's huge salt deposit. Industrial chemicals are produced here, along with electric fuel pumps, game boards, furniture, castings, construction equipment, stampings and watch cases.

A special advantage: Ludington is in Outstate Michigan's great vacation land. What better place for an industry or branch plant than a good port city in a region where people really enjoy living?

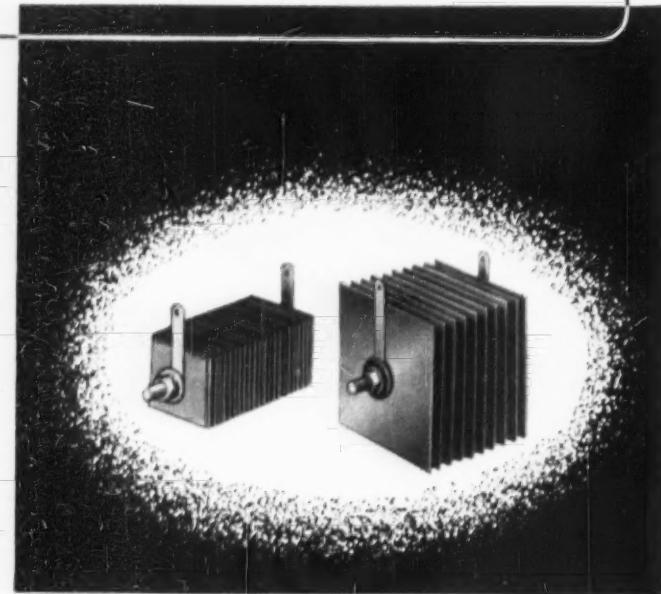
\*Others are Bay City, Saginaw and Cheboygan on Lake Huron or connecting waters, and Muskegon, Manistee, Frankfort, Traverse City, East Jordan and Boyne City on the Lake Michigan side.

For further information contact our Industrial Development Department.

**CONSUMERS POWER COMPANY**  
JACKSON, MICHIGAN

Serving 3,500,000  
Outstate Michigan People

# SYNTRON SELENIUM RECTIFIERS



**Assure Dependability . . . . .**

## Consistent Quality at Low Cost

Syntron Selenium Rectifiers provide efficient, economical a-c to d-c power conversion. Syntron's quality control process results in rectifiers of extreme uniformity and stability. Lightweight, yet rugged they are constructed to withstand shock, vibration and adverse climatic conditions—Low forward voltage drop means greater efficiency, extremely low ageing long life. Widest range of sizes in the industry.

### Other SYNTRON Equipment

of proven dependable Quality

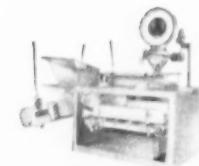
#### FEEDER MACHINES

Provide volume feeding of bulk materials to processes. Complete units—storage hoppers, vibrator and feeder. Electromagnetic drive—no mechanical wearing parts.



#### WEIGH FEEDERS

Controlled, accurate feeding by weight. Load variations corrected automatically. Capacities up to a hundred tons per hour.



#### TEST SIEVE SHAKER

Provide accurate, high speed sizing of test samples. Positive control of time for uniform testing. Electromagnetic drive.



**SYNTRON COMPANY**  
774 Lexington Avenue Homer City, Penna.

## TRACING PROFITS

*Continued from page 39*

to the conference table.

Speaking to an ASTM symposium on radioactivity, W. L. Davidson, Assistant Director of Central Research for Food Machinery and Chemical Corporation and former director of the AEC's Office of Industrial Development, said: "If adequate health and safety measures are enforced, there should be no reason to believe that radiation hazards arising from radioisotopes utilization will be greater than the usual hazards to which industrial workers are subjected daily." However, he does sound one warning note: In some cases, a long period may intervene between exposure to radiation and the first symptoms of radiation sickness. It is important to keep accurate, long-term records of employee exposure.

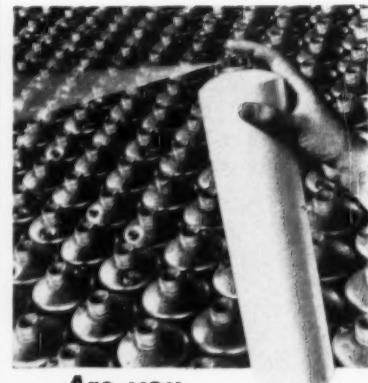
But safety does rate special attention as a public relations problem. Radioisotopes are new to most people. They can be dangerous, and yet their danger can not be seen or directly felt. This means that people fear their effects, yet may unwittingly treat them too carelessly.

Not long ago, for instance, a worker purloined a radiocobalt capsule because he wanted the string that was attached to it. He thought the capsule was a piece of scrap metal. A near panic resulted—one that could easily have been prevented if the employees and the community had been fully informed about the radioactive material before it was used. As Charles R. Williams, director of Liberty Mutual's industrial hygiene services, told a recent conference:

"The companies which have openly discussed their plans with public officials and with the public through the newspapers, and who have given employees a frank appraisal of the hazards involved, informed them of safeguards being set up for their protection, and trained them to do their work safely and effectively, have had little or no difficulty."

But, he warned, companies which have failed to inform the public and their employees in detail prior to embarking on a nuclear program have met considerable opposition.

The third "S," suitability, is a problem of a different sort, but here, too, the newness of radioisotopes



### Are you Marketing under Pressure?

Packaging under pressure is commanding the attention of men alert to new competitive weapons.

Success stories are being built around paints, freon, insecticides, room fresheners, belt dressings, fire extinguishers, propane and many other products.

TMC Disposable Cylinders for aerosols save time, cost in shipping, stocking, and distribution all along the line. Standard 55 and 75 cu. in. industrial sizes are I. C. C. approved.

Write for the latest thinking on this new development in marketing for industry.



### TUBE MANIFOLD CORPORATION

Fabricators of Tubular Products  
Serving America's Foremost Manufacturers Since 1920  
4377 BRYANT ST., N. TONAWANDA, N. Y.

**AMERICA'S FINEST PROMOTIONAL PEN**

**HERITAGE**

**ONLY 24¢ AND LESS!**

**For Winning New Customers  
For Advertising Gifts  
For "Calling Cards"  
For Premium Incentives**

**Including YOUR Name  
and YOUR Ad in  
100 Quantities or more!  
DOLLAR Quality at  
a fractional price!**

**Regular Size or "Slim"  
Goldtone or Chrome  
Lavish Barrel Colors**

**Your Copy Under  
BAKED LACQUER  
for Permanence  
Write TODAY on  
your company  
letterhead for  
a FREE SAMPLE!**

**"Sales Tools to  
Build Your  
Business"**

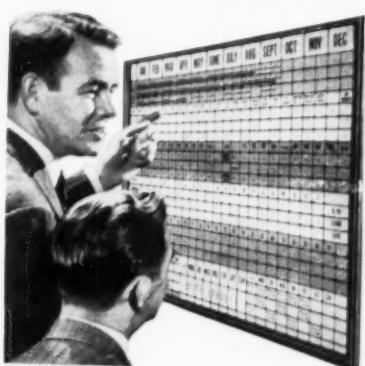
**PUT YOUR MESSAGE IN  
YOUR CUSTOMER'S POCKET!**

**GIFTS WITH YOUR  
IMPACT MOTIVATE SALES!**

**H ERITAGE MFG. CORP.  
WHOLESALE DIVISION  
FORT WORTH 12, TEXAS**



## How To Get Things Done Better And Faster



### BOARDMASTER VISUAL CONTROL

★ Gives Graphic Picture—Saves Time, Saves Money, Prevents Errors  
★ Simple to operate—Type or Write on cards, Snap in Grooves  
★ Ideal for Production, Traffic, Inventory, Scheduling, Sales, Etc.  
★ Made of Metal Compact and Attractive. Over 60,000 in Use

Full price \$49.50 with cards

**FREE**

24-PAGE BOOKLET NO. D-100  
Without Obligation

Write for Your Copy Today  
**GRAPHIC SYSTEMS**  
55 West 42nd Street • New York 36, N.Y.

plays an important role.

There is always a chance, as A. K. Hannum of Thompson Products Automotive Research Laboratory points out, that tests will be so set up that characteristics which are unimportant stand out; and that test results will be misinterpreted, leading to an unjustified verdict of unsuitability.

### They Can't Do Everything

Naturally, isotope tracers—both stable and radioactive—have limitations. Not every element has an isotope of the desired type; and in addition, there are technical problems.

As B. L. Clarke points out: The sensitivity of isotope techniques is remarkable. Atomic radiation can be detected when radioisotopes are present in concentrations of as little as a billionth of a gram. But, Clarke says, "this must be tempered by the knowledge that, whereas the detectable level of radioactivity is amazingly low, the intrinsic precision of measurement is inferior to that of many classical methods." In areas of high sensitivity, he notes, the precision of measurement may not exceed 2% or 3%.

These limitations explain why even laboratories which are fully equipped to use isotopes do not use them for every type of study. The National Bureau of Standards, for instance, employs conventional methods for such studies as the diffusion of gases through ceramic coatings because the conventional methods are cheaper, safer, and sensitive enough for the purpose.

Still, there are so many places where tracers can be used that it is short-sighted to ignore them. That is particularly true now that it is possible to have isotope work performed outside the plant—at one of several commercial laboratories.

For instance, Rust-Oleum Corporation wanted a measure of the degree of penetration of its fish-oil based protective coatings through heavy layers of rust on steel. But standard techniques could not achieve the desired dependability and accuracy. It looked as though radiotracers might be able to answer the question, but Rust-Oleum's own laboratory was not equipped for tracer research and so it turned to Battelle Memorial Institute for this specialized work.

At Battelle, a radioactive primer

### Takes a secretary

less than 20 minutes to do an "all-day" retyping job

### Takes a boss

less than half the time formerly needed to answer his mail



## Kodak's new Verifax Signet Copier quickly pays for itself

even in the "one man" office

**Only \$148** . . . that's an unheard-of low price for an office copier. An *incredibly low price* for a Verifax Copier, which does so many jobs beyond the scope of ordinary office copiers.

See all the extras  
the Verifax Signet gives you  
at a new low cost—

Makes 5 copies in 1 minute for 2½¢ each.

Nothing is ever left out on Verifax copies—they're photo-exact from letterhead to signature. This is especially important when you're copying legal documents, accounting reports.

Photo-lasting. Verifax copies are not affected by summer heat—are as long-lasting as any business record.

Easy to read, handle, file. Verifax copies have the "look" and "feel" of fine letterhead papers.

Signet makes copies on preprinted office forms, on card stock and film—and on both sides of copy paper.

Makes a translucent "whiteprint" master for use in direct-process and blueprint machines.

Makes an offset plate in 1 minute for less than 20¢, with low-cost adapter.

Get all the facts on the Signet . . . and complete line of Verifax Copiers. Also valuable booklet showing the short cuts Verifax Copiers have brought to thousands of offices.

### MAIL COUPON TODAY

EASTMAN KODAK COMPANY, Business Photo Methods Division  
343 State St., Rochester 4, N.Y.

Gentlemen: Please send free Signet folder, "Short Cuts" booklet, and names of near-by dealers. No obligation.



4.7

Name \_\_\_\_\_ Company \_\_\_\_\_

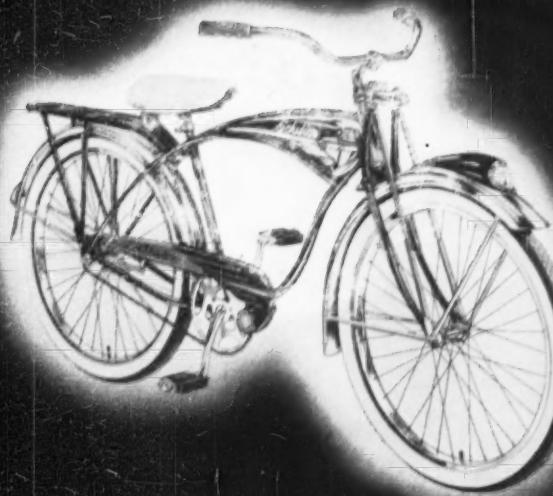
Position \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**Kodak**  
TRADE-MARK

**Start your sales appeal with the finish**



## **THE CHOICE OF YOUNG AMERICA Schwinn "Bikes" with Chrome Finishes ... BY UDYLITE**

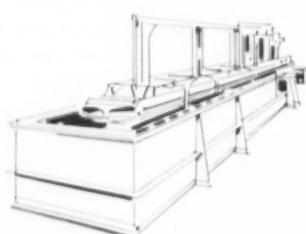
Since 1895, when the first Schwinn "Safety" model bicycle was built, quality has been paramount in the manufacturing standards of every "bike" bearing the Schwinn name. This "built-in" fine-quality has brought Arnold Schwinn & Company leadership in its field for the Schwinn trade mark is known by boys and girls everywhere and is invariably their first choice for youthful transportation.

With the ever increasing demand for their products, the company was faced with a problem familiar to manufacturers in many lines—"how to increase output and if possible, to improve quality of the product?"

The answer was found in Udylite Plating Equipment and Udylite Processes. Today, hundreds of parts that go into the final assembly of a Schwinn bicycle are electroplated with beautiful, durable finishes that are turned out at high speed. Quality has been improved, and costs lowered.

There are many unusual features incorporated in the design of Udylite Automatic Plating and Processing Machines. Why not investigate today?

... whatever your product  
whatever your metal finishing  
problem... it pays to  
consult Udylite.



**World's Largest  
Plating Supplier**

was prepared and applied to rusted steel, and then the rust layer was removed, a step at a time, by lapping. After each lapping operation, the level of radioactivity was measured until the bare steel was reached. Result: conclusive proof that Rust-Oleum's primer does penetrate through a layer of rust as heavy as five mils, and a significant percentage of the primer reaches all the way to the bare metal.

When tracer research is done by such an outside laboratory, its cost is, of course, a matter for negotiation before the work starts.

But suppose a company wants to set up its own isotope laboratory.

Then cost depends on many factors, including the amount of standard laboratory equipment already available and the type of isotope that is to be used.

A company that has a good, modern, well-equipped laboratory, and expects to use an isotope which requires relatively little shielding (Carbon 14, for instance), may not have to spend much more than \$5,000, including the cost of the isotope and storage facilities for it.

On the other hand, a company which does not have adequate laboratory facilities, and plans to use an isotope with a strong, penetrating x-ray-like radiation, may find costs to be considerably higher.

### **How to Get Started**

In either case, the natural starting point for the prospective isotope-user is the AEC's Isotopes Extension at Oak Ridge, Tenn.

From Oak Ridge National Laboratory, operated by Union Carbide Nuclear Company, one can get the information-packed *Catalog of Radioisotopes*, plus a good deal of supplementary information. ORNL also has a stable isotope inventory.

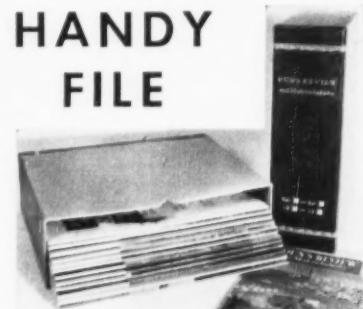
The number of publications—books, magazines, and speeches—on the subject of radioisotopes is assuming astronomical proportions. As a start, though, the proceedings of the United Nations International Conference on the Peaceful Uses of Atomic Energy, and the proceedings of recent conferences of the Atomic Industrial Forum and the National Industrial Conference Board, are well worth reading.

[Note: This is the tenth in a series on atomic energy in DR&MI. A list will be supplied on request.]

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**Next month in**

## **DUN'S REVIEW and Modern Industry**

### **EBOONITE: NEW WAYS TO USE AN OLD MATERIAL**

**Neither ebonite nor any hard rubber is a product panacea. But this family of relatively inexpensive, durable materials is well worth a second look. Can it be put to work for you? This article, in the August issue, will help you to answer this question.**

**Need  
specialized  
help  
in any  
of these  
directions?**



The modern approach to solving special business problems is to call in specialized help. That way you don't divert your own key personnel from regular duties. You don't overburden your regular staff. And you save a maximum of payroll dollars. Backed by long experience in solving similar prob-

lems for other organizations, Ebasco gets to work promptly, gets the job done right and economically while your normal flow of routine operations continues. Ebasco business specialists are at your call anywhere and anytime you need them, for assignments large or small in any line of business.

#### Some of the Businesses and Industries served by EBASCO

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For a complete outline of the services Ebasco offers, write for our booklet, "The Inside Story of Outside Help." Address: Ebasco Services Incorporated, Dept. N, Two Rector St., New York 6, N.Y.

# SPECIAL REPORTS ON FINISHING NON-FERROUS METALS

## NUMBER I—Decorative, Corrosion-Resistant Finishing with Iridite

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a decorative finish or a good paint base for non-ferrous metals. However, continued developments are so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can combine salable appearance with durability in one finish at a competitive price advantage. Report II on paint base, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, as a basis for this discussion, a "decorative" finish is considered as any chromate film that is used as a final finish in itself. It may be truly decorative in that its sole purpose is to enhance the beauty of the product. For example, a bright chrome-like finish or a pleasing bronze appearance are among the many effects that can be obtained. It may be functionally decorative in that it reduces reflectivity for camouflage purposes or provides a means of color-coding parts. But, in all cases, the Iridite films protect the metal against corrosive attack.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. These films can produce a wide variety of pleasing appearances. The basic colors of the Iridite coatings are grouped below by metals.

**ZINC and CADMIUM:** Metallic bright, light iridescent, iridescent yellow, bronze, olive drab.

**COPPER, BRASS, BRONZE:** Metallic bright, yellow.

**ALUMINUM ALLOYS:** Clear, iridescent yellow, brown.

**MAGNESIUM ALLOYS:** Metallic bright, iridescent yellow-red, brown.

**SILVER:** Metallic bright.

In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

Depending upon the metal and the Iridite used, corrosion resistance of clear and bright films ranges from mild passivity to as high as 500 hours in salt-spray; on heavier dark films, salt-spray resistance ranges from approximately 100 to 1000 hours.

It is this combination of decorative and corrosion resistant properties that accounts for the widening use of Iridite finishes. For example, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, a combination of lustrous chemical polishing of the as-cast surface of zinc die castings and good resistance to corrosion. Further, in many cases,

### WHAT IS IRIDITE®?

Briefly, Iridite is the trademark for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

sizeable savings in the cost of buffing and electroplating are realized.

On many steel parts, a simple system of zinc or cadmium plate and bright Iridite is used instead of more costly electroplated finishes to provide a bright, decorative and protective finish with tremendous savings in material, equipment and labor.

In finishing aluminum, where corrosion resistance or paint adherence is the prime consideration, the aircraft industry has all but abandoned the anodizing process in favor of recently developed chromate conversion coatings, among them Iridite #14 and #14-2 (Al-Coat). These formulations and their method of application can be varied to retain the original metallic appearance while providing acceptable corrosion resistance, or to produce a fully colored brown finish that offers exceptional corrosion protection. Again, time and manpower savings are astounding—one company saved at least \$15,000 a year on maintenance of racks alone and another \$40,000 on materials and labor in only nine months. In addition, of course, hundreds of thousands of dollars are saved by eliminating the need for expenditures for generators, heating equipment and racks.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to having decorative and protective functions, these chromate coatings form an excellent base for organic finishes and bonding compounds. They have low electrical resistance. Some can be soldered and welded. The Iridite film itself does not affect the dimensional stability of close tolerance parts.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 E. Monument Street, Baltimore 5, Maryland.



Woodward starts its employee relations at the beginning in the personnel department where aptitude testing is given, quiet and privacy assured.

## GOOD PRACTISES FOR EMPLOYEE MORALE

*There are many steps available to all companies  
to help boost efficiency and quality.*

SIMPLE ground rules for the maintenance of employee morale are musts for every company that wishes to produce a quality product efficiently. At the Woodward Governor Company, Rockford, Ill., straightforward and effective measures constitute normal operating procedure. For the most part they are steps that can be taken by any company, regardless of size or available space. And the results pay off in terms of less turnover, higher efficiency, better quality, and over-all time and money savings.

A safety- and health-conscious management realizes the importance of providing the tools necessary for the

attainment of its objectives in this area. Among the basic needs are: clean, well-lighted, uncluttered work areas; a communications system that will keep employees informed on company status; insistence on safety regulations; education on the uses and developments of the product; provision of some recreational and time- and money-saving facilities; a good medical or first aid department; pre-employment aptitude testing. Put them all together with some ideas of your own and you have a formula that can result in better performance, better customer relations, and all around satisfaction.

*More pictures on following pages*



Healthy employees mean less absenteeism. Electrocardiograph is typical of equipment in medical department.



A clean, modern barbershop on the premises is one of the facilities that save time and money for employees.



## Exterior and interior... simple or elaborate with **ARMCO Steel Buildings**

Look how they provide a wide choice of treatment — at lower cost!



Industrial Plant



Airport Building

Notice the difference in these exteriors. To meet your needs, ready-to-erect Armco Steel Buildings come in hundreds of sizes from 28 sq. ft. to 100,000 sq. ft. or more for assembly by an Armco Construction Crew, a local contractor or your own crew. They easily lend themselves to architectural treatment. Prefabricated Armco STEELOX Panels provide a permanent, weather-tight structure.



Machine Shop



Office

Notice the difference in these interiors, both plant facilities and office in the same Armco Steel Building. You can leave the interior unfinished. Or, since STEELOX Panel construction is based on 16-in. module, the interior you want can be finished the same as in any other building. Conventional handling takes care of insulation, heating, wiring, and similar details. For complete facts, mail the coupon!

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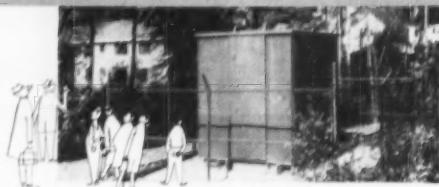
## CORROSION PROTECTION PLUS GOOD LOOKS

In this "age of color", managements are sensitive to the need for paint that is both anti-corrosive and decorative. Paint should not only preserve plant and equipment, it should also preserve the good will of neighbors and the enthusiasm of personnel.

Subox\* and Subalox\* paints do all this. They are the only paints in America made with Suboxide of Lead, therefore they provide excellent corrosion protection. And they are made in a wide range of metallic colors, and are effective indoors as well as outside.

Subox paints offer a complete paint system. Often the same variety functions as both primer and finishing coat and may even answer the need for reflectivity as well as radiation.

Send for color cards and data book "Subox Paints".



\*Trade Mark

Established 1924  
20 Fairmount Plant,  
Hackensack, N. J.

See Catalogues in Sweet's Industrial and Engineering Files

weigh the  
modern way!  
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SAVE MONEY!  
SAVE TIME!

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OUTMODES COSTLY  
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COMPLETE LINE OF 110  
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TYPICAL WEIGHING APPLICATIONS  
Just a few of the many applications include—loading, unloading, batching, check weighing, foundry charging, production control, process control, checking inventory, and, protecting your equipment from overloading.

#### HYDROSCALES guaranteed for one year

They are guaranteed to be free of defects in workmanship and materials, and to be accurate to  $\frac{1}{2}$  of 1% of the maximum dial capacity—for 1 year.

Write for descriptive literature explaining model features.

## HYDROWAY SCALES, INC.

20612 West 8 Mile Road • Detroit 19, Mich.

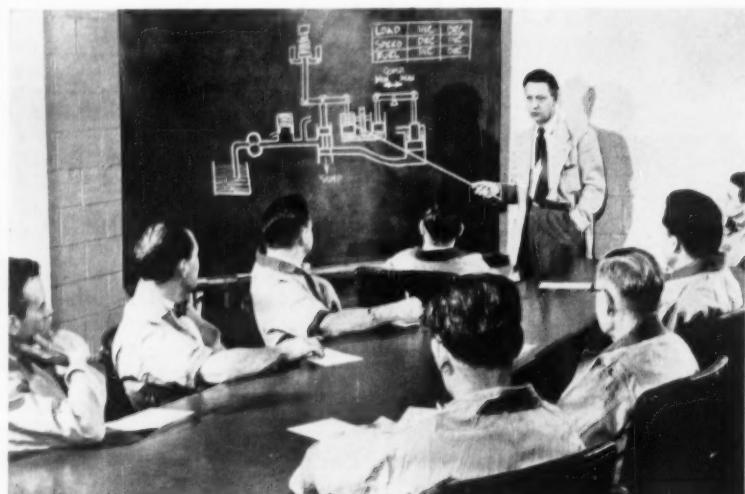
"The world's largest producer of crane scales"

## PHOTO VISIT

continued



As employees relax in a recreation area, blackboards keep them up-to-date on daily shipments and the company's month-to-month financial progress.



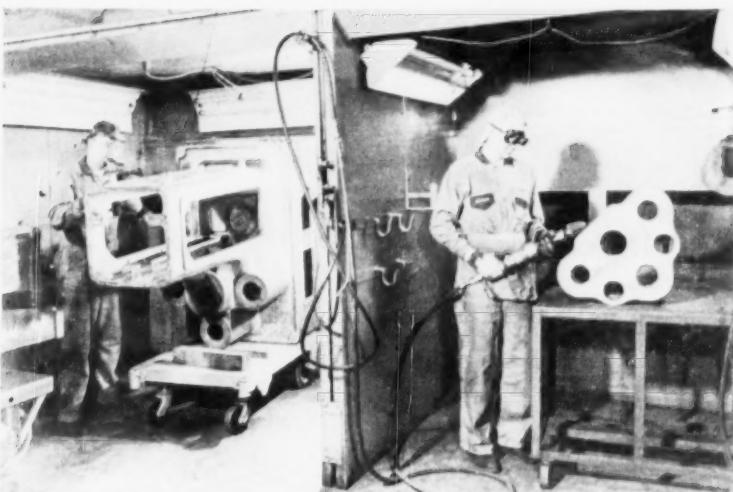
Designers and other interested employees receive detailed instruction, in both classroom (above) and shop, on latest product development and uses.



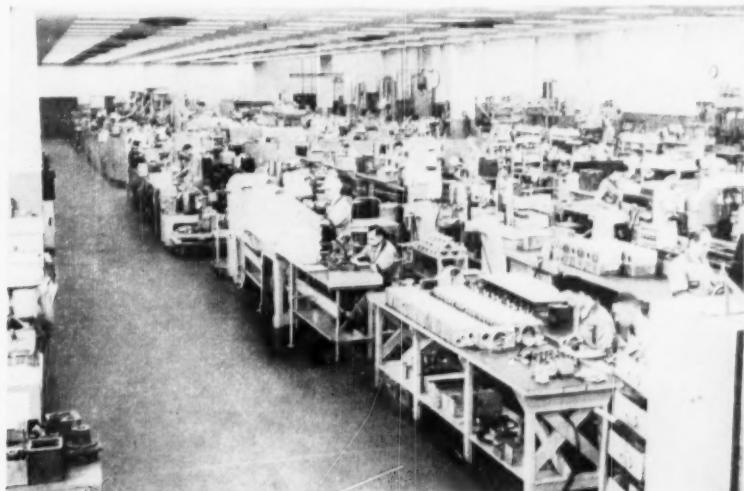
Products receive equal attention at Woodward. In laboratory's stratosphere chamber, simulated flying conditions are duplicated for testing purposes.

## PHOTO VISIT

continued



Employee safety is vital to both individual and company. At Woodward gloves and masks or goggles are required wear for those in hazardous jobs.



Wide aisles, clean floors, good light and air circulation are important to all employees whether they work on the production line or in the office.



Work stations on this conveyor line are economically spaced, trim, clean, and efficient; each has a telephone connection with a production supervisor.

More pictures on following page

Advertisement

# FOUR WAYS TO CUT MATERIALS HANDLING COSTS

*Case Histories show how to use "Lift-Portation" for truck loading, machine feeding and heavy lifting*

by Frank Breckenridge  
Vice-President in charge of  
Engineering and Manufacturing

To maintain profits in the face of the rising costs of our expanding economy, economists forecast the need of a 3% increase in productivity per man each year. Because manufacturing consists largely of movement of materials, a study of material handling methods will indicate many clues to sources of this increased productivity.

Loading and unloading that previously took hours is now completed in minutes.

### ELECTRO-LOADER

A maintenance department in a medium size plant was located 3 feet below ground level. Supplies and machines moved into and out of the department by means of a ramp. It was slow, laborious work.



By replacing the ramp with a Globe Electro-Loader, traffic was speeded and muscle power was eliminated.

The Electro-Loader is installed on the floor. No excavation was necessary. Powered by an electric motor, the platform travels between floor and ground level by push button control.

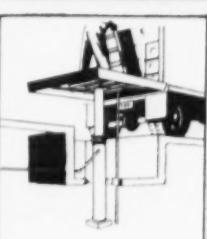
### TRANS-O-MATIC RAMP



The shipping dock of a large paint factory in Buffalo, N. Y., was continually jammed with trucks. Often trucks waited to load and unload. While the dock was "standard" height above road level, most truck bodies were too high or too low for hand trucks to roll smoothly in or out.

Three self-leveling Trans-O-Matic Ramps were installed so that each truck bed, high or low, was provided with an easily traversed ramp. Loading and unloading was speeded by as much as 50%. Lost time from spilled goods and breakage was eliminated. No longer do trucks wait for platform space.

### TRUCK LOADING



A one-story, ground level branch warehouse and service station was faced with the frequent need to load and unload fork lift trucks, weighing from 1½ to 8 tons. Without a loading platform, each operation was slow and hazardous.

When a Globe Loading Lift was installed, fork lift trucks were run onto the platform at ground level, lifted and then run onto the truck.

GLOBE HOIST COMPANY  
East Mermaid Lane at Queen Street  
Philadelphia 18, Penna.

DR-736-CH

Please send me a copy of Time-Saving, Cost-Cutting Case Histories about Globe Lift-Portation.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**GLOBE**  
PLATFORM LIFTS

PLANTS: DES MOINES—PHILADELPHIA  
LONG BEACH, CAL.

PHOTO VISIT

*continued*



Photos courtesy of Columbus Dispatch

**Here's double-barreled doorway efficiency and protection!**

A Kinnear Steel Rolling Door and Rolling Grille in the same opening! Both open *upward*, coiling into a small space above the doorway.

When the grille alone is closed, it bars intruders without blocking light, air, sound, or vision.

When the Kinnear Rolling Door is closed, its rugged curtain of interlocking steel slats gives extra protection against weather, intrusion, and fire.

With both door and grille closed, a *double* steel barrier repels vandals, thieves, or troublemakers.

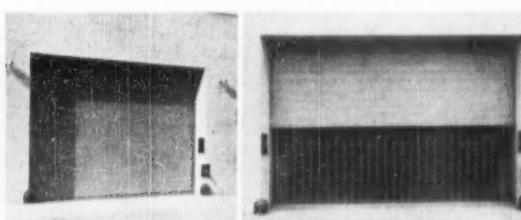
Separately or together, the door and grille can be raised or lowered by

## Kinnear Rolling Doors

push button. When opened, they clear the entire doorway, and stay completely out of the way. Whether opened, closed, or in action, they never take up usable floor, wall or ceiling space.

For safety, eye-appeal, efficiency and protection at doorways of any size, in new or old buildings, with any architecture or building material, you get top value with Kinnear Rolling Doors. Their *coiling upward action* has been proved by more than half a century of time-saving, space-saving, low-cost performance. Write today for full information.

**HEAVILY GALVANIZED** for lasting protection, Kinnear Steel Rolling Doors are thoroughly coated with 1.25 oz. of pure zinc per square foot of metal (ASTM Standards) then treated with Kinnear's special Paint Bond to assure quick firm full-coverage of field applied paint.

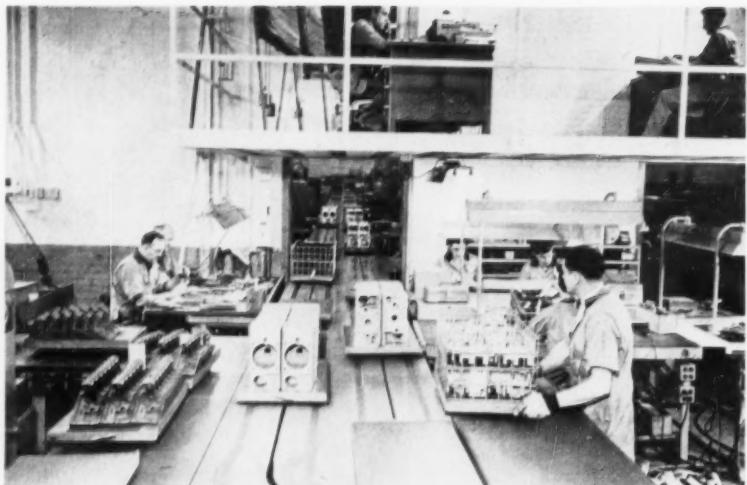


The neat, trim appearance of Kinnear Rolling Doors and Grilles is evident in the new and modern building housing the newspaper printing presses of the Columbus (Ohio) Dispatch.

**KINNEAR**  
**ROLLING DOORS**  
**Saving Ways in Doorways**

**The KINNEAR Mfg. Co.**

FACTORIES  
1500-20 Fields Avenue, Columbus 16, Ohio  
1742 Yosemite Ave., San Francisco 24, Cal.  
Offices and Agents in All Principal Cities



Neatness and efficiency are reflected in this section of the conveyor line. Production supervisor on balcony, workers can telephone each other.



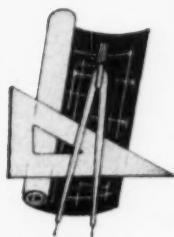
Woodward's policy does not neglect customers. At morning mail session executives read all mail from customers to keep abreast of current business.



In keeping with latest developments, company has three planes for use by sales, service, and engineering departments. Map helps in flight planning.

# Craftsmen of the 20<sup>th</sup> Century

No. 17 of a series to introduce you to some of industry's outstanding plastics craftsmen



The artisans of bygone days applied their skills to wood and glass, to silver and iron and stone.

Today, a fabulous new family of materials is channeling talents in new directions. Modern craftsmen are designing products in versatile plastics—and mass-producing them at reasonable cost.

Pictured here are two of the specialists who are creating plastic products that are serving every industry, every home.

Monsanto, a major producer of high-quality plastic materials, salutes these craftsmen who are helping to mold America's tomorrow.

When your plans call for plastic parts or products, consult an expert custom molder



**Clyde E. Morrell, Prolon Plastics Company, Florence, Mass.** Fifteen years ago Clyde Morrell took a job as a draftsman in a newly formed plastics operation. Today, at 37, he is recognized as a top man in his field—Chief Mold Designer for one of the largest custom molding companies in America. Mr. Morrell is the man to whom manufacturers put their questions: What will a mold for my product cost? Will it satisfy my production requirements? Is a redesign of my product necessary to guarantee trouble-free production? Under his supervision the mold design department engineers the custom mold, expedites its construction and assumes responsibility for its successful operation.

In spite of Mr. Morrell's long experience, he says, "It's a young industry. We are constantly developing new ideas and techniques. To this end our professional association, The Society of Plastics Engineers, is earnestly devoted. I consider myself fortunate to have grown with an industry that has such a limitless future."



**Stephen J. Szorc, Molded Products Division, Admiral Corp., West Chicago, Ill.** Like his four brothers, Mr. Szorc has been an eye-witness to many changes in custom molding since 32 years ago, when he operated a small hand press turning out ladies' compacts. Now superintendent of compression molding at the huge new Admiral plant, Mr. Szorc supervises the operation of 27 semi-automatic hydraulic presses including a 3,000 ton press as tall as a 3-story building where 4 TV cabinets can be made at the same time.

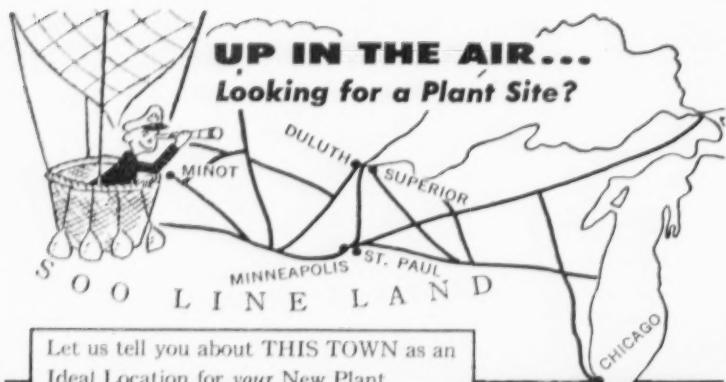
From his wide background and experience in the molding industry, Mr. Szorc points out, "Compression molding has made tremendous strides in the past 10 years, not only in the size of equipment being used, but in the complexity of jobs handled. With the opportunities which plastics provide for reducing the number of components by molding several parts in a single unit, it is possible, for example, to produce a complete radio speaker in less than 2 minutes."

MONSANTO CHEMICAL COMPANY,  
PLASTICS DIVISION, SPRINGFIELD 2, MASS.



Resinox® Reg. U. S. Pat. Off.

**RESINOX**  
PHENOLIC MOLDING COMPOUNDS



**SOO LINE RAILROAD** serves dozens of towns like it. Plenty of Everything for New or Expanding Industries; Skilled Labor, Power, Water, Fuel and

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(all inquiries confidential)  
Call or write your Nearby Soo Line Representative

or  
GEO. T. BERGREN  
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Minneapolis 2, Minn. FEderal 2-1261



#### Self-Dumping Hopper cuts waste handling time 85%

It used to take two hours daily to handle waste at Newark Boxboard Co., Newark, N.J. Now one fork truck operator does the whole job in 15 minutes by using Roura Self-Dumping Hoppers. Five Roura Hoppers serve as waste receptacles, conveniently located. The fork truck takes them, one after the other, to the shipping dock. When he

flips the latch the load is dumped automatically. The hopper rights itself, locks itself, and is returned to its station.

Roura Self-Dumping Hoppers fit any standard lift truck. They're cutting costs and saving time in many different industries handling wet or dry, hot or cold bulky materials.

**ROURA**  
*Self-Dumping*  
**HOPPER**



WANT MORE DETAILS? Attach this coupon to your letterhead and mail to  
**ROURA IRON WORKS**  
1404 Woodland Ave., Detroit, Michigan

#### TV'S LITTLE BROTHER

*Continued from page 50*

not loaded improperly. The press is so large and so shaped that the operator can't see the critical loading areas.

#### To observe remote locations.

Railroads have put TV to work to record boxcar numbers and to control traffic operations in an entire yard. The Potomac Railroad Yard, Alexandria, Va., was the first to use ITV for routine boxcar check.

#### To tie together related observation points.

At the Spotswood, N.J., plant of Peter J. Schweitzer, Inc., cigarette-paper maker, frequent trips to the pulp-washing tank are no longer necessary, thanks to industrial TV. Workers formerly had to climb two flights of stairs to observe the condition of the material in the tank in order to prevent jamming or plugging which could lead to costly shutdowns. Now though still remote, the tank is kept under constant watch.

At the Louisiana Power and Light Company's Nine Mile Point generating station, there is no gate guard, but instead a TV camera, which relays an image of visitors to an office where a secretary presses the come-in button. Thus, two widely separated tasks can be combined in one spot with considerable savings.

To use industrial TV as a cost cutter, list the jobs in your plant which are primarily routine watching. Then determine if two or more of them can be combined by using ITV.

What are the costs of installing industrial TV in a plant? Prices begin at about \$1,500 for a basic system and move upward from there, depending on the special equipment which your installation may require. Producers estimate that virtually all installations of ITV are custom-made jobs. Cameras have been set up so as to be weatherproof, shock-proof, explosion-proof, and even to operate un-

Closed circuit television proved its versatility at the Building Owners and Managers Convention in Cincinnati last year. To demonstrate its automatic elevators at the convention, Westinghouse set up a camera in the ceiling of an elevator in the Netherlands Plaza Hotel so that the impromptu reactions of riders could be relayed to the Westinghouse convention booth.

der water. Lenses can be adapted to various light levels. Infrared tubes can serve as watchmen even in darkness.

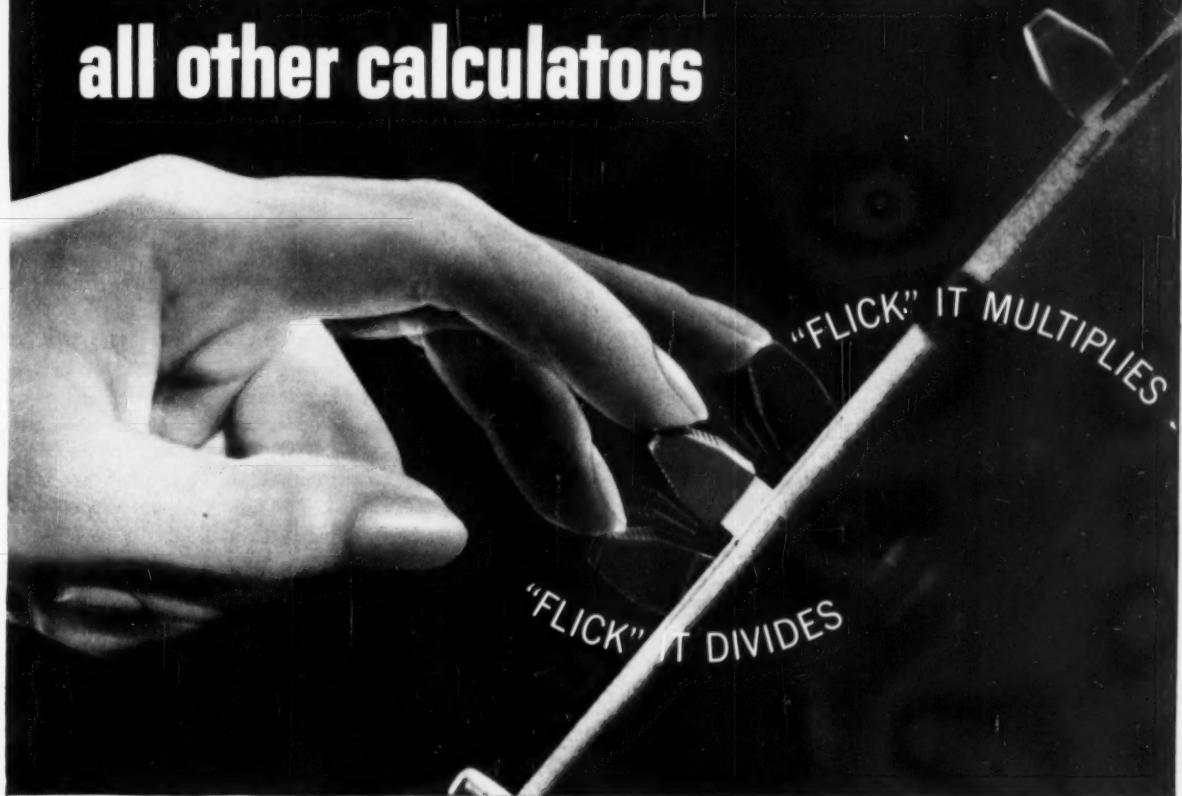
In addition to RCA, Diamond Power, Dage, General Precision Laboratory, and Kay Lab, a number of other companies produce ITV equipment. Among them are Curtiss-Wright, Farnsworth Electronics, DuMont, Murrow Products, and, of course, General Electric.

THE END



"See! Just as I figured—painted on!"

# The Victor "Flick" that outdates all other calculators



## New Victor Automatic Printing Calculator

Saves You Costly Man-Hours Because It's Simpler, Easier, More Accurate To Use

Here's the greatest advancement in calculators in a decade. This exclusive Victor feature lets you *multiply or divide* with a gentle "Flick" of your finger. No mental counting. "Up" to multiply . . . "Down" to divide . . . middle position to add or subtract—and all *automatically!*

The new Victor Calculator prints your figures *on tape*, just as you would write them. Automatic Constant lever holds figures for repeated division or multiplication. Exclusive Total Transfer button eliminates need for re-entering totals.

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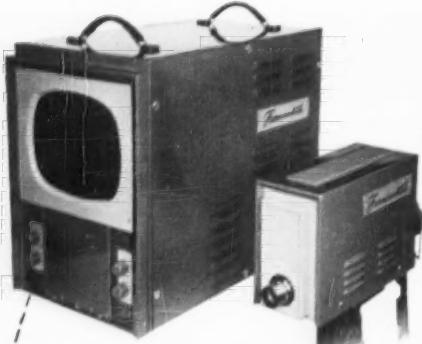
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## POINT OF DECISION

*Continued from page 41*

spend some time in each of the plants to find out what is going on, and to see that the efforts of the Plant Technical Sections are moving in the same direction. The task is one of co-ordination. If a new idea is developed in one plant, it is his job to see that the information gets over into use in another plant. In working on this project of co-ordination, the Technical Manager issues some instructions to plant people but, when he does so, it is done with the understanding and support of the local Plant Manager.

The Operations Control Division Advisory Committee works within the policies and objectives established by the General Manager in the Division Advisory Committee. Meetings are held the first Monday of the month. There is an agenda, and minutes are issued following each meeting. The minutes are circulated to people who can use the information.

Another level of advisory committee is chairmanned by each Plant Manager and is called the Plant

Advisory Committee. The members are those plant executives who report directly to the Plant Manager; the managers of the Factory Department, the Industrial and Public Relations Department, the Accounting Department, and the Purchasing Department.

Each Plant Manager runs his Plant independently. The function of his committee is to advise him on over-all operation of the plant, to assist in establishing policies and objectives for the plant, and to accomplish these things within the framework established by the Division and the Corporation. This group works from prepared agenda, meets every month for a day, and issues minutes after each meeting.

The mechanics of the meetings are the same but, at this point, the atmosphere within the group begins to change a little bit. Although a great deal of information is being fed into this group from the division level, these are the people who are coping with the production operation at the plant level.

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and the managers of the plants hold advisory committee meetings; so do the other members of the General Manager's Division Advisory Committee. The same general pattern is true for the controller, and the Directors of Purchases, Industrial and Public Relations, and Sales. The Plant Managers and the Director of Sales use their advisory committees to run isolated, fairly autonomous operations.

### Harmonic Action

The other directors, in their advisory meetings, are talking about both division and plant co-ordination problems. Wherever there is a plant counterpart to a division operation the Division Advisory Committee member in that area has an indirect or co-ordinating responsibility. The co-ordinating activities are always carried on with the complete understanding and co-operation of the Plant Managers.

Meeting regularly in all plant operations are advisory committees chairmanned by each member of the Plant Advisory Committee, the Factory Advisory Committee, and the Production Advisory Committee. As an illustration, the Factory

Advisory Committee is operated by the Factory Manager. The group consists of the Plant Engineer, the Production Superintendent, and the supervisors of the Technical, Product Development, Industrial Engineering, Production Planning, and Inspection Sections. These meetings are held more often and, in many cases, members of other advisory committees may attend as guests. This advisory group and the others in the plants are dealing directly with such things as work schedules, production capacities, and manpower requirements.

Finally, in the production departments, meetings are held with the General Foreman as chairman working with his Shift Foreman and Assistant Foreman; and production worker meetings with the producing personnel meeting with Foreman and Assistant Foremen.

The production workers meetings are perhaps the ultimate of Wolverine Tube's multiple management. Here, the line foreman brings together groups of hourly workers who report to him and spends some time discussing problems involved in the actual production of our products. The emphasis is on giving

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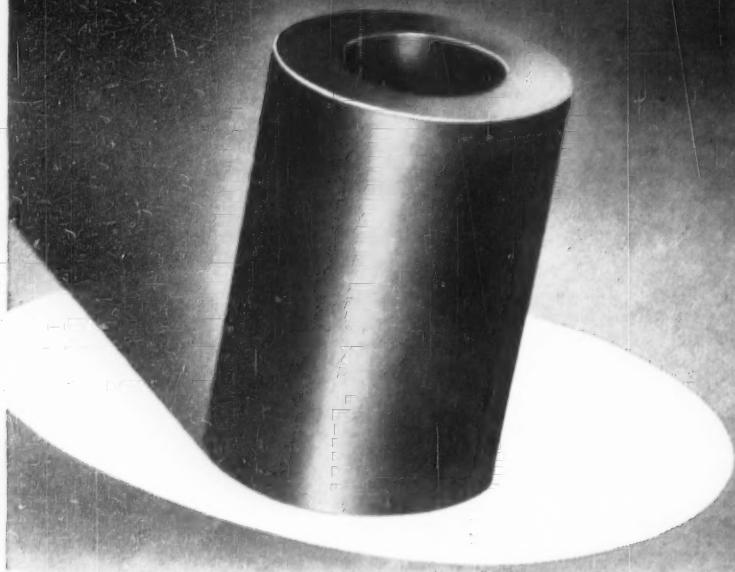
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ing the worker information to help him, and giving him an opportunity to contribute to the success of his work. These are the newest of participative management meetings and are pretty much in the experimental stage. Results, to date, have been both very good, and questionable. It looks as though, after careful experimentation, these meetings will do a job.

This is the basic system of decentralized management, using consultation and participation. It is essentially quite simple,—merely putting on an organized basis what many companies do informally.

## A Key to Success

One of the keys to success in multiple management is giving people enough information to do their jobs. The system of advisory committee meetings is designed to do this within the regular, formal organization of the Division.

As an informational assist to multiple management, several other kinds of meetings are held. These meetings essentially differ from multiple management in that they cut across organization lines.

In the plants, when there's news of general interest, the entire plant personnel is invited to a meeting at which the Plant Manager delivers a prepared address. The program is designed to give everyone, at one time, the same story on the operation of the plant. Questions and answers are saved for the regular multiple management meetings.

Each month in the Division headquarters, and at each of the plants, the financial people present a Profit-and-Loss report to executive and supervisory personnel, including general foremen. These meetings cover the financial position of the Division for the preceding month, and for the year to date. Factual discussions are held that help operating personnel better understand the cost and profit situation of their departments.

The Plant Managers assemble all their plant supervision one evening a month. These are called Supervisors' Meetings, and are specifically designed for the broad over-all picture of both the Division and Corporation business positions. Currently, members of the home office Corporate Management Group are putting on presentations with question-and-answer periods. Programs

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on such things as: "Our Sales Position," "Plant Modernization," "Expansion of Facilities," and "Personal Development," have been scheduled.

How are the results measured? One of the most important payoffs can be measured in terms of promptness and soundness of decisions. Observation shows that prompt and sound decisions are being made by our management people right down through the foremen on the production lines.

#### Additional Payoff

Closely allied is a second payoff. This is measured in terms of willingness to accept responsibility. People who are eager to accept responsibility for their jobs are able to make decisions. This indicates an absence of trying to evade job responsibilities.

Prompt and sound decisions, and willingness to accept responsibility are, in themselves, contributions to a third payoff. This payoff is in terms of planning, organizing ability, and development on the part of our management people. The method gives people an opportunity to think for themselves.

Two additional points fit closely together in the appraisal of the success of multiple management. As a result of a better understanding of the over-all problems of the business, there is an increased desire on the part of every individual to do a better job. Second, because our people come to know the other fellow's problems, and to understand, we're all pulling together to do a big job, there's the absence of friction. This is an important aspect of the success of any business.

In ten years the multiple management activity has changed in details only. Any feature that proves to have no value is discarded. New ideas are tried. The essence of our method is to give everyone all the information he needs to do his job, and then provide a means for him to be a working part in managing.

Our people like it that way. They have done, and are doing, a good job. As individuals, they have developed into better managers, and they are developing better managers under them. The talent was here. Multiple management brought out those talents, strengthened the organization, helped get the show on the road.

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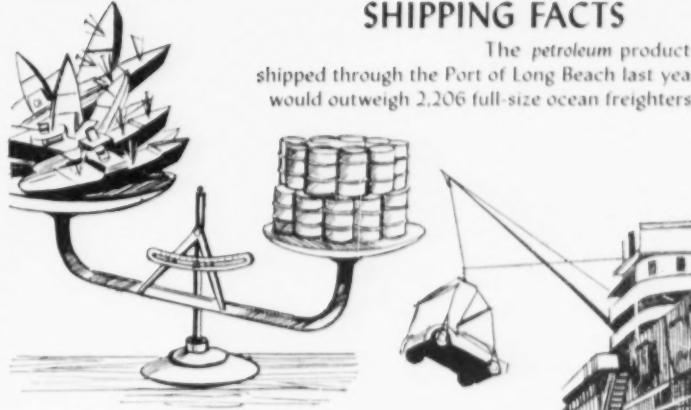
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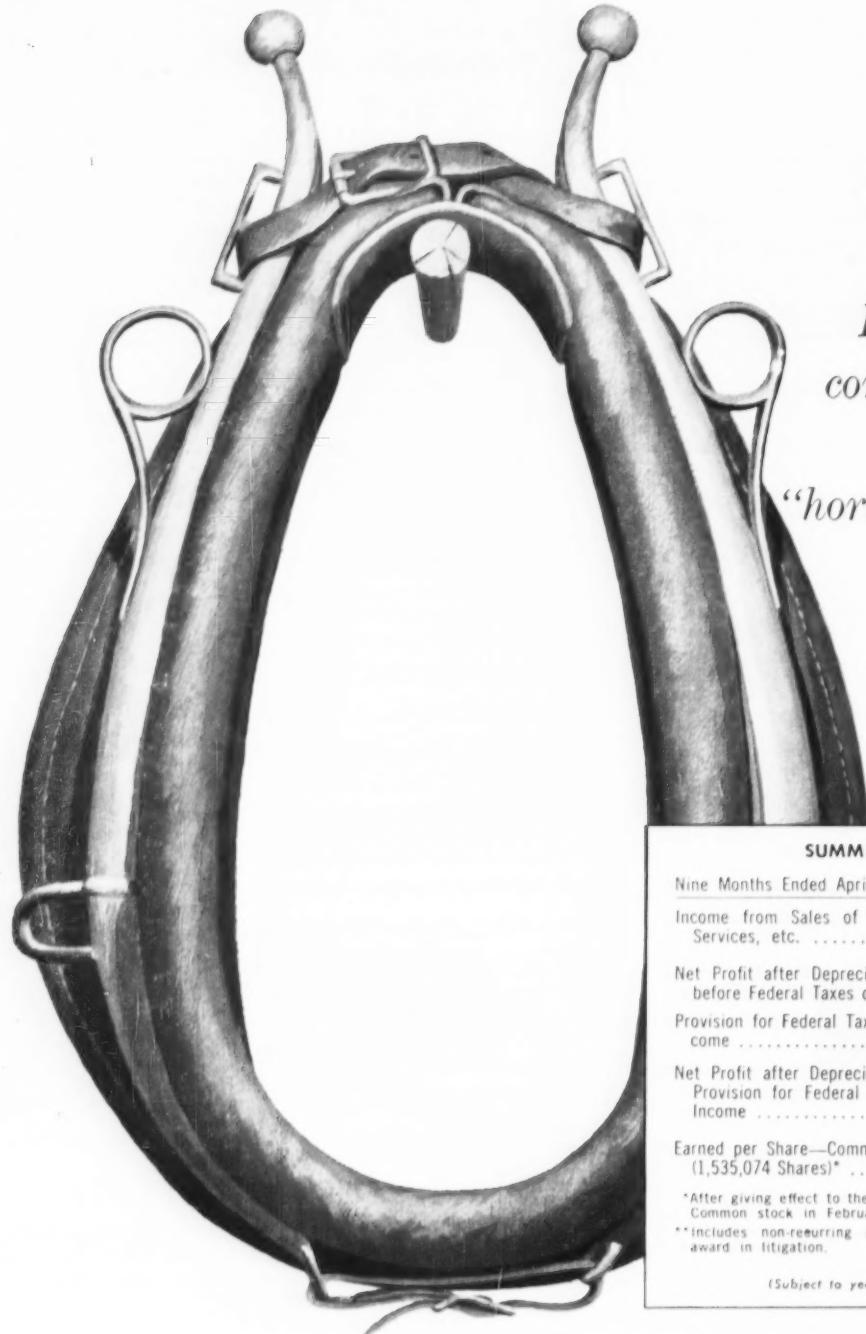
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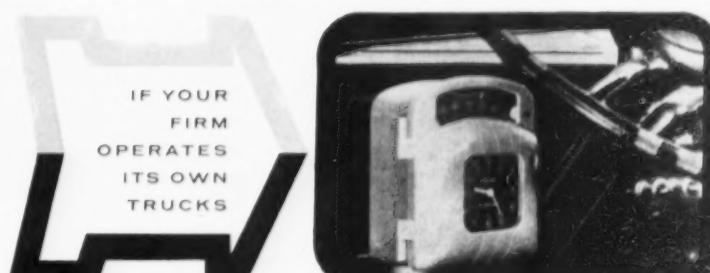
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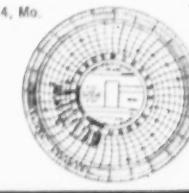
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